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ATARI USER

Vol. 4 No. 4 August 1988 £1.25

The Cheat!

How to give all your games infinite lives



Take your Atari on a tour of the universe

NEW! Double-capacity disc drive revealed

2 exciting car racing games to type in!

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In this delightful game you control BLOB, the Biologically-Operated Being, navigating him through 500 action-packed screens to rebuild the unstable planet's core.

Bubble Bus' Starquake is one of the biggest-selling games for home micros, due to its incredibly-addictive gameplay and cleverly-animated graphics. It has received such accolades as Game of the Month in *Computer and Video Games,* and was awarded a *Crash Smash.*

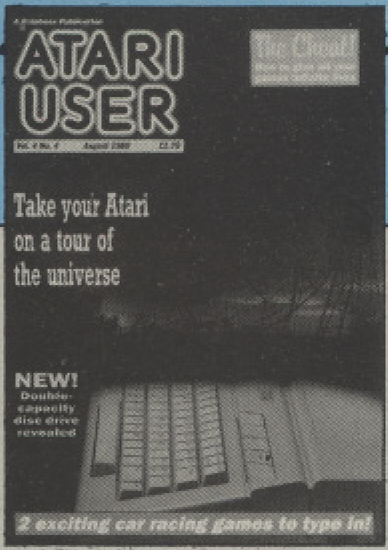
● *What reviewer Bob Chappell said about the Atari version:*

'Starquake is top-notch fare . . . quality dripping from every byte'

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Atari 8-bit (48k minimum)	Starquake	Tape	£8.95	£4.95	£4	FREE
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Vol. 4 No. 4 August 1988

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Published by:
Database Publications Ltd,
Europa House, Adlington Park,
Adlington, Macclesfield, SK10 4NP

ABC 33,573 January-June, 1986

Subscription rates for 12 issues, post free:

£15 – UK
£18 – Europe (incl. Eire)
£33 – Overseas (Airmail)

ISSN 0266-545X

"Atari User" welcomes program listings and articles for publication. Material should be typed or computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette tape or disc. Please enclose stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication by Database Publications Ltd will be on an all-rights basis.

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News trade distribution: Europress Sales and Distribution Limited, Unit 1, Burgess Road, Ivyhouse Lane, Hastings, East Sussex TN35 4NR. Tel: 0424 430422.

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Get it right! II

All major listings in this issue are accompanied by checksums to help you overcome typing mistakes. For full details of how they work, see the article on Page 36 of the July issue.

Gallup Software Chart

THIS MONTH	LAST MONTH	TITLE (Software House)	COMMENTS	PRICE
1	▲ 3	**GRAND PRIX SIMULATOR** *Code Masters*	Removed from its number one spot by Zybex, this month sees its return to the pole position.	2.99
2	●	**GREAT AMERICAN ROAD RACE** *Silverbird*	10 drivers await you in this race crossing the USA. You can read our review in this issue.	1.99
3	▼ 1	**ZYBEX** *Zeppelin*	An excellent shoot-'em-up, worth more that its budget price. Good graphics.	2.99
4	▲ 9	**MATTA BLATTA** *Silverbird*	The Telecom Birds are doing well this month with two of their Silverbird budget range in the Top Ten.	1.99
5	◄ 5	**SPEED ACE** *Zeppelin*	Zeppelin's first release for the Atari. Good use of the split screen in this motorbike simulation.	2.99
6	●	**TANIUM** *Players*	Another split screen game, but this time a shoot-'em-up. Nice music. Reviewed this issue.	1.99
7	●	**DECATHLON** *Firebird*	Returns to the charts, this is good value and enjoyable, with multiple events to choose from.	1.99
8	▲ 16	**COPS 'N' ROBBERS** *Atlantis*	Dubious content both as a game and as a concept. Playable but not for long. Poor graphics and sound.	1.99
9	▼ 6	**SPOOKY CASTLE** *Atlantis*	This one starts difficult to play and rapidly becomes impossible as Gormless Gary avoids the bats.	1.99
10	▼ 2	**REVENGE 2** *Mastertronic*	Geff Minter's long-awaited sequel to Revenge of the Mutant Camels. As strange as ever.	1.99
11	●	**PRO GOLF** *Atlantis*	Another new budget title from Atlantis. An enjoyable stroll around the links. Fancy a round.	1.99
12	▼ 4	**RIVER RESCUE** *Alternative*	This re-release of an old title has proved very popular. Coming down the charts, but still fun.	1.99
13	▼ 7	**STEVE DAVIS SNOOKER** *Blue Ribbon*	Re-released to coincide with the last snooker championships; good for its genre and hasn't dated.	1.99
14	●	**ROCKFORD** *Mastertronic*	Returns to the chart this month – your mining little friend is well worth adding to your collection.	2.99
15	●	**AIR WOLF** *Encore*	Translated from the TV programme. You fly a helicopter with a mission to complete.	1.99
16	●	**ATARI ACES** *US Gold*	This compilation finds its way back into the charts. Good value and a chance to see some old friends.	9.95
17	●	**SOCCER** *Alternative*	One of many types of football games around. At the price there can be little said against it.	1.99
18	●	**FEUD** *Mastertronic*	Addictive and interesting – battling wizards in colourful surroundings. Action packed.	1.99
19	●	**HENRY'S HOUSE** *Mastertronic*	If you haven't already got this platform game add it to your collection; stunning graphics.	1.99
20	▼ 15	**BMX SIMULATOR** *Code Masters*	Code Masters is renowned for its simulations, with nice graphics and good sound.	1.99

Gleadow's vision of the future

Atari market leader in home computing

BOLD initiatives that will take Atari UK into the 1990s as undisputed leader in home computing have been revealed by general manager Bob Gleadow.

He sees his company breathing new life into the 8 bit market and leaving its competitors trailing behind.

Gleadow unveiled his vision for the future during a visit to the *Atari User* offices in Adlington, Cheshire.

"The XE console will carry the Atari flame in the 8 bit marketplace. It will be closely followed by the VCS 2600", he said.

"Already the US games market has burst into life and the UK will not be far behind in this long-awaited revival.

"Nothing could be more pleasing for those of us who work for Atari – everyone here still has their heart in entertainment, which is where it all started".

Gleadow feels a prime reason for games consoles making a big comeback is that "no parents want to buy their kids a tool they can't share with them – and entertainment is a fundamental aspect of western civilisation".

The Atari boss is currently considering a major project that would shake the world of software retailing.

His plan is to set up a dedicated Atari Games Centre in 30 to 40 of Britain's biggest cities and towns, where games players could go and try out the new releases for themselves.

"The centres would mainly be based on existing Atari retail outlets but would be unique in that the customer would have a real choice of what to buy", said Gleadow.

To supply the increased demand for entertainment software that would stem from such a project, Atari is encouraging all software houses to port ST games to the XE system.

In the meantime more and more major outlets are being persuaded to carry XE games. Among them are Smiths, Comet – and maybe Dixons according to Gleadow.

While he was in Adlington, Gleadow quashed rumours that Atari is planning to hold its own computer show.

"We were extremely pleased with the obvious success of the spring Atari User Show and are committed to making Database Exhibitions' November event an equally impressive statement of Atari's presence in the UK market", he said.

ATARI IS RACING AHEAD IN USA

ALL the signs from America are that Atari is on the verge of a new and prosperous era fuelled by a games systems revival.

At the summer Consumer Electronic Show in Chicago the impressive Atari stand was built around the 2600, 7800 and XE machines.

Lower priced consoles and software, and an open-arms policy towards third party developers – who have responded with growing enthusiasm – have placed Atari firmly in the US computing spotlight.

It has happened within four years of the company having been virtually written off as computing history following its disastrous slump in fortunes when the bottom dropped out of the video games market.

But now everything has changed. A report in Marketing Week said: "Comebacks are part of the American way and games software's return to glory is right up there with Lazarus.

"A resurgence in video game sales has pushed Atari into the golden circle of Fortune 500 companies".

The UK computer industry newspaper CTW is forecasting: "It ought to be an Atari Christmas – it has managed to release 50 new products recently and won more show awards than any other company".

Atari UK spokesman Peter Walker told Atari User: *"The reports speak for themselves – we're very confident about the future".*



Bob Gleadow . . . faith in games consoles

T shirt boost for sales

THE summer sales promotion that leading Atari 8 bit games distributor Microdealer has just launched was being hailed as a success before it even started.

One of its features is a unique range of T shirts – each bearing a colourful graphic design depicting a specific game or software house.

They carry an rrp of £6.99 and are available from all retailers supplied by Microdealer (0908 74000).

"I can honestly say these are really exciting T shirts – the kids will love them", said Microdealer sales manager Les Sinclair. "Even before the promotion began we had to order massive extra quantities to meet the demand from enthusiastic retailers".

The promotion also involves free gifts and a draw with computers as the main prizes.

All games and peripherals supplied by Microdealer will carry a token for each £5 of value and these can be collected on a special card.

Depending on how many stickers you collect – 10 is the minimum needed to claim a prize – you can win a mouse mat, T shirt, Cheetah 125 joystick and titles from the Microdealer Top 30.

Birthday competition winners

MAY marked the third birthday of *Atari User*, an event which we celebrated with Atari and Tynesoft in a birthday competition with over 30 prizes.

The response was astounding, but the first correct answer out of the sack was from L Clarke from Yardley Wood. He will soon be receiving an Atari XE Games System – 65XE console, light gun, joystick which comes with three games.

Runners-up prizes – copies of Tynesoft's superb Winter Olympiad 88 – were won by: S Newan, Warley; M Rodgers, Edinburgh; D Middlecoat, Waddon; S Gregory, Hollingworth; D Parker, Mirfield; A Dillon, Preston; M Johnson, Bristol; D Goldstraw, Huyton; N Redford, Oldham; P Gooding, Lowestoft; A Chidgey, Wellington; S Armstrong, Westcliff-on-Sea; G Dickinson, Rossendale; S Meloy, St Austell and K Thoney.

Third prize copies of Mirax Force go to: A Linton, York; P Brind, Bexley Heath; D Barnfield, Tipton; P Dunstan, Knowle; K Pantall, Swadlincote; C Gilchrist, Kings Norton; E Muldowney, Eglinton; S Green, Hornchurch; J Barnett, Underwood; P Fox, Broadstairs; M Harris, Sheppey; D Hambly, Surbiton; B Jeffery, Leigh-on-Sea; P Fisher, Maidenhead and S Forsyth, Worthing.

A further 15 games – copies of Phantom – are on their way to: B Arnold, Elstree; G Sipson, Hardwick; R Hall, Crossgates; J Firth, Maidstone; C Smith, Welling; J Briley, Carlton; P Deacou, Kidlington; S Wood, Llanidloes; M King, Orpington; J Willis, Haywards Heath; C Sneddon, Fife; M Jones, Fareham; T Wyatt, Plymouth; M Harrison, London and M Hallas, Tingley.



Focus on the VCS 2600

ATARI User will be ready for the massive boost to the entertainment scene that will be created by the revitalised VCS 2600.

The September issue will contain a comprehensive guide to the games system which took the computer industry by storm when it was originally introduced – and which has now sold over 15 million units worldwide. And there will be a regular section in future issues devoted purely to new games coming out for the VCS 2600.

But first of all, *Atari User* reviewers will be running the rule over the best of the existing games that have helped sell more than 150 million rom cartridges to date. With Atari founding father Nolan Bushnell now writing for the machine, and leading UK supplier Palan Electronics promising no less than 18 new titles, the VCS 2600 looks set for a stunning return to the forefront of computer gaming.

And it will all be reflected in the pages of *Atari User*.

Swedes scuttle pirates

BRITISH software circles have welcomed a crackdown on games piracy in two Scandinavian countries as "a step in the right direction".

But in Europe, particularly in the Mediterranean countries, piracy of entertainment software remains rampant.

Several cases have recently been before the courts in Sweden and Denmark where an estimated 65 per cent of all games bought are pirated.

The prosecutions have been inspired by SUS, the Union of Software Distributors and Retailers active in Scandinavian countries. It has been investigating cases of piracy and putting pressure on governments to enforce the copyright laws.

Swedish computer magazine editor Christian Martensen says: "Piracy is being driven underground – people are starting to be nailed".

He estimates that Scandinavian sales of legitimate games – mostly imported from the US and UK – could increase threefold if the pirates are forced to curtail their activities.

The UK anti-piracy organisation, the Federation Against Software Theft (FAST), said the news from Scandinavia was most "heartening".

Bob Hay, FAST's co-ordinator of anti-piracy enforcement, told *Atari User*: "We widely welcome the Scandinavian initiative and are in touch with SUS, offering whatever help we can.

"However, entertainment software piracy remains primarily a southern European problem – with Spain, Italy, Portugal and Greece the main concern.

"The situation is particularly worrying in Greece – the only EEC member country that doesn't even recognise copyright laws as a form of protection for computer software".

Anne Creasey, export sales manager for Mandarin Software – a major UK supplier of games to continental markets – said: "The Scandinavians have taken a step in the right direction, but the problem is so widespread in Europe it almost defies description.

"I've had Italian retailers tell me they won't even stock entertainment software any more because piracy is so rife in that country".

HOW many times have you been playing your favourite shoot-'em-up and ran out of lives as you neared the last screen? Or have you ever wished that you could resurrect that dead mega-hero who was killed by the 40-headed killer squirrel?

From this frustration spawned a utility which has allowed me to complete many games that long caused me a lot of trouble. To keep the program length short only 33 game modifications have been included.

However, the option to enter your own cheats has been written into the code, and once entered, the program will allow you to resave the original program and your cheats to disc – up to a maximum of 999.

Not all can be displayed at once, so a menu system is used to present 14 at a time. After typing in the program check it by using GIR II! When you are happy that it's correct you can run it. You are now presented with your first menu and three options:

> **Y** Enter your own cheats
> **Z** Next menu
> **S** Save the utility to disc

They are very easy to use and are followed by plenty of on-screen prompts to remind you what you're doing. If you select Y, the information must be input in the following order:

- **Sector number:** Input the sector which the information will be saved to.
- **Check byte:** This remains the same whatever the state of your characters statistics are in. If you find that it isn't a

So you want to live for ever?

MICHAEL CLARK offers cheaters an easy option



```
0 REM ****************************
1 REM *        THE CHEAT!        *
2 REM *    BY MICHAEL CLARK      *
3 REM *     (C) ATARI USER       *
4 REM ****************************
5 LINE=1034
10 GRAPHICS 0:SETCOLOR 2,0,0:SETCOLOR
1,0,15:POKE 82,0
20 DIM L(14),N$(60),A$(1),D(128),D$(12
8),MC$(30)
30 FOR F=1 TO 26:READ A:MC$(F,F)=CHR$(
A):NEXT F
40 D$(1)=CHR$(0):D$(128)=CHR$(0):D$(2)
=D$(1)
50 DATA 104,104,141,11,3,104,141,10,3,
104,141,5,3,104,141,4,3,169,82,141,2,3
,76,83,228,96
60 M=0:RESTORE 1000
70 ? CHR$(125):POSITION 15,0:? "The CH
EAT!"
80 POSITION 8,1:? "Written by Michael
Clark"
90 POSITION 13,2:? "For ATARI USER":?
:?
100 POSITION 17,3:? "MENU:";M+1
110 FOR F=1 TO 14:READ L,N$
120 IF N$="*END" THEN MX=F-1:GOTO 150
130 ? CHR$(64+F);".";N$(1,38);
140 NEXT F:MX=14
150 ? :? "Y.ENTER YOUR OWN CHEAT DATA"
:? "Z.ANOTHER MENU   S.SAVE PROGRAM TO
 DISK"
160 ? "MAKE CHOICE:";:INPUT A$:IF A$="
S" THEN 720
170 IF A$="" THEN ? CHR$(28);CHR$(156)
;:GOTO 160
180 A=ASC(A$)-64:IF A<1 OR A>MX AND A<
>25 AND A<>26 THEN ? CHR$(28);CHR$(156
);:GOTO 160
190 IF A=25 THEN 400
200 IF A=26 AND N$="*END" THEN RESTORE
 1000:M=-1
210 IF A=26 THEN M=M+1:GOTO 70
220 ? CHR$(125);:GOSUB 240
230 GOTO 60
240 RESTORE 999+A+(M*14)+1*(M>0):READ
L,N$:RESTORE L
250 READ SEC,CHKB,CHKT,BYTE,NBYTES
260 FOR F=1 TO NBYTES:READ A:D(F)=A:NE
XT F
270 ? N$(1,39):? "INSERT ";N$(40);" DI
SK"
280 ? :? "CHECK":? "1...DISK IS NOT WR
ITE PROTECTED":? "2...DRIVE DOOR IS CL
OSED"
```

constant byte, set it to –1.

- **Check byte should equal:** This is the value that the check byte should be before any modifications are made to it during the game. If, however, you have to set the check byte to –1 set this to –1 so that the check will be ignored.
- **Byte base:** This the first byte in the sector to be changed.
- Next you have to enter the number of bytes to be looked at in the sector. They can either be changed or skipped over, and this is done by the data which follows it. If a byte is set to –1 then the item is skipped over, but any number other than –1 will change the byte in the sector.

To clarify this rather complicated process let's take a look at line 2000 of the program:

```
2000 DATA 2,1,65,9,5,255,-1,-1,-1,255
```

which can be explained as follows:

Sector to edit: 2
Check byte number: 1
Check byte: 65 – the Ascii for A
Byte base: 9
Number of bytes: 5
Data:
255 – change byte 9 to 255 (hex FF)
–1 – skip the 10th byte
–1 – skip the 11th byte
–1 – skip the 12th byte
255 – change byte 13 to 255 (hex FF)

If at this point you find yourself totally confused, don't worry, you can still use the program with the existing cheats. In the near future we will include more for you to enter.

The process of finding the correct sector to alter is a little involved and can take some getting used to but here are a few general hints and tips.

Using a sector editor search for your character's name on the disc. You will usually find the values you want to edit very close to it – often in the same sector or at the most one or two either side.

Games programmers use several different methods of storing your characteristics on disc. They can be in decimal, hex or low and high byte, and finding them is just a matter of trial and error. Once you have found them just run Cheat and away you go.

WARNING: *Never make any modifications to a master disc. Always create a back-up and practise modifying it. If you damage an original disc a software house won't replace it for you.*

```
290 ? "3...YOU REALLY WANT TO DO THIS"
:? :? "PRESS <RET> TO ALTER SECTOR"
300 ? "OR <X> TO EXIT TO MENU"
310 POKE 764,255:INPUT A$:IF A$="X" TH
EN RETURN
320 MC$(19,19)="R":GOSUB 760
330 IF CHKB=-1 AND CHKT=-1 THEN 350
340 IF D$(CHKB,CHKB)<>CHR$(CHKT) THEN
? CHR$(253):? "YOUR DISK IS NOT THE SA
ME AS MINE!!!":POSITION 0,0:GOTO 270
350 FOR F=1 TO NBYTES
360 IF D(F)=-1 THEN NEXT F
370 D$(BYTE+F-1,BYTE+F-1)=CHR$(D(F)):N
EXT F
380 MC$(19,19)="W":GOSUB 760
390 ? "O.K., IT HAS BEEN CHANGED.":? "
PRESS <RET>":INPUT D$:RETURN
400 ? CHR$(125);"O.K. ENTER THE FOLLOW
ING DATA":? :? "SECTOR NUMBER:";:INPUT
 SEC
410 ? "CHECK BYTE#:";:INPUT CHKB
420 ? "CHECK BYTE SHOULD EQUAL:";:INPU
T CHKT
430 ? "BYTE BASE TO CHANGE:";:INPUT BY
TE
440 ? "# OF BYTES:";:INPUT NBYTES
450 FOR F=1 TO NBYTES:? "DATA ";F;":";
:INPUT D:IF D>255 OR D<0 OR D<>INT(D)
THEN ? "ERROR!":F=F-1:NEXT F
460 D(F)=D
470 NEXT F
480 N$=" ":N$(40)="DEST."
490 ? "ALL DATA ENTERED.":? :GOSUB 270
500 ? CHR$(125):? "WOULD YOU LIKE THIS
 DATA TO BECOME PART OF THE PROGRAM? Y
/N";:INPUT A$
510 IF A$<>"N" AND A$<>"Y" THEN 500
520 IF A$="N" THEN 60
530 ? :? "ENTER A SUITABLE NAME FOR TH
IS CHEAT    (NOT MORE THAN 38 CHARS.)
   end here  ";CHR$(27);CHR$(29)
540 INPUT N$:FOR F=LEN(N$)+1 TO 60:N$(
F,F)=" ":NEXT F
550 ? :? "ENTER A NAME FOR THE DISK TH
AT MUST BE  PLACED IN THE DRIVE. EG 'C
HARACTER'    OR 'SCENARIO'"
560 ? "(MAX 20 CHARS)     ";CHR$(27);C
HR$(29)
570 INPUT D$:N$(40)=D$
580 ? CHR$(125):?
590 REM POKES
600 ? LINE;" DATA ";LINE+1000;",";N$
610 ? LINE+1000;" DATA ";SEC;",";CHKB;
",";CHKT;",";BYTE;",";NBYTES;",";
620 FOR F=1 TO NBYTES
630 IF F/20=INT(F/20) THEN LINE=LINE+1
:? CHR$(30);" ":? LINE+1000;" DATA ";
640 ? D(F);",";
650 NEXT F:LINE=LINE+1:? CHR$(30);" ":
? "5 LINE=";LINE
660 ? "GOTO 770"
670 ? :? "IGNORE THE ABOVE AND PRESS R
ETURN       RAPIDLY"
680 POSITION 0,0:END
690 ? CHR$(253);CHR$(253);CHR$(253):?
"STOP! STOP! THE INFORMATION IS NOW IN
  MEMORY! PRESS RETURN FOR MENU."
700 ? "REMEMBER TO SAVE THE PROGRAM TO
 DISK";:INPUT D$
710 GOTO 60
720 ? CHR$(125);"SAVE GAME TO DISK":?
"ENTER 'D:FILENAME.EXT' OR <X> FOR MEN
U"
730 INPUT D$:IF D$="X" THEN 60
740 ? "SAVING...":SAVE D$
750 GOTO 60
760 X=USR(ADR(MC$),SEC,ADR(D$)):RETURN

1000 DATA 2000,Alternate Reality ressu
rrect char#1    CHARACTER
1001 DATA 2001,Alternate Reality ressu
rrect char#2    CHARACTER
1002 DATA 2002,Alternate Reality ressu
rrect char#3    CHARACTER
1003 DATA 2003,Alternate Reality ressu
rrect char#4    CHARACTER
1004 DATA 2004,Ultima III - all marks
and cards       SCENARIO
1005 DATA 2005,Ultima III super hero a
bilities char1  SCENARIO
1006 DATA 2006,Ultima III super hero a
bilities char2  SCENARIO
1007 DATA 2007,Ultima III super hero a
bilities char3  SCENARIO
1008 DATA 2008,Ultima III super hero a
bilities char4  SCENARIO
1009 DATA 2009,Ultima IV - all spells
and reagents      BRITTANNIA
1011 DATA 2011,ULTIMA IV super hero ab
ilities char1   BRITTANNIA
1012 DATA 2012,ULTIMA IV super hero ab
ilities char2   BRITTANNIA
1013 DATA 2013,ULTIMA IV super hero ab
ilities char3   BRITTANNIA
1014 DATA 2014,ULTIMA IV super hero ab
ilities char4   BRITTANNIA
1015 DATA 2015,ULTIMA IV super hero ab
ilities char5   BRITTANNIA
1016 DATA 2016,ULTIMA IV super hero ab
ilities char6   BRITTANNIA
1017 DATA 2017,ULTIMA IV super hero ab
ilities char7   BRITTANNIA
1018 DATA 2018,ULTIMA IV super hero ab
ilities char8   BRITTANNIA
1019 DATA 2019,WIZARDS CROWN super her
o's - char #1   FIRST (1)
1020 DATA 2020,WIZARDS CROWN super her
o's - char #2   FIRST (1)
1021 DATA 2021,WIZARDS CROWN super her
o's - char #3   FIRST (1)
1022 DATA 2022,WIZARDS CROWN super her
o's - char #4   FIRST (1)
1023 DATA 2023,WIZARDS CROWN super her
o's - char #5   FIRST (1)
1024 DATA 2024,WIZARDS CROWN super her
o's - char #6   FIRST (1)
1025 DATA 2025,WIZARDS CROWN super her
o's - char #7   FIRST (1)
1026 DATA 2026,WIZARDS CROWN super her
o's - char #8   FIRST (1)
1027 DATA 2027,AUTODUEL - Loadsamoney!
!!!!!           SIDE B
1028 DATA 2028,AUTODUEL - Super hero a
bilities        SIDE B
1029 DATA 2029,DROL 50 LIVES!!!
                DROL
1030 DATA 2030,THRESHOLD 99 LIVES!!!
                THRESHOLD
1031 DATA 2031,JUMPMAN 50 LIVES!!!
                JUMPMAN
1032 DATA 2032,BELLUM 255 LIVES!!!
                BELLUM
1033 DATA 2033,MEDIATOR 99 LIVES!!!
                MEDIATOR
1999 DATA 0,*END
2000 DATA 2,1,65,9,5,255,-1,-1,-1,255
2001 DATA 2,1,65,10,5,255,-1,-1,-1,255
2002 DATA 2,1,65,11,5,255,-1,-1,-1,255
2003 DATA 2,1,65,12,5,255,-1,-1,-1,255
2004 DATA 555,17,255,15,1,255
2005 DATA 555,17,255,19,12,153,153,153
,153,-1,-1,-1,153,153,153,153,153
2006 DATA 555,17,255,83,12,153,153,153
,153,-1,-1,-1,153,153,153,153,153
2007 DATA 556,17,255,19,12,153,153,153
,153,-1,-1,-1,153,153,153,153,153
2008 DATA 556,17,255,83,12,153,153,153
,153,-1,-1,-1,153,153,153,153,153
2009 DATA 10,97,0,57,34,153,153,153,15
3,153,153,153,153,153,153,153,153,153,
153,153,153,153,153,153,153,153,153
2010 DATA 153,153,153,153,153,153,153,
153,153,153,153,153
```

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```
2011 DATA 8,-1,-1,20,9,153,153,153,153
,-1,153,153,153,153
2012 DATA 8,-1,-1,52,9,153,153,153,153
,-1,153,153,153,153
2013 DATA 8,-1,-1,84,9,153,153,153,153
,-1,153,153,153,153
2014 DATA 8,-1,-1,116,9,153,153,153,15
3,-1,153,153,153,153
2015 DATA 9,-1,-1,20,9,153,153,153,153
,-1,153,153,153,153
2016 DATA 9,-1,-1,52,9,153,153,153,153
,-1,153,153,153,153
2017 DATA 9,-1,-1,84,9,153,153,153,153
,-1,153,153,153,153
2018 DATA 9,-1,-1,116,9,153,153,153,15
3,-1,153,153,153,153
2019 DATA 206,127,207,64,6,255,255,255
,255,255,255
2020 DATA 207,127,208,100,6,255,255,25
5,255,255,255
2021 DATA 209,127,210,10,6,255,255,255
,255,255,255
2022 DATA 210,127,211,45,6,255,255,255
,255,255,255
2023 DATA 211,127,212,80,6,255,255,255
,255,255,255
2024 DATA 212,127,213,115,6,255,255,25
5,255,255,255
2025 DATA 214,127,215,25,6,255,255,255
,255,255,255
2026 DATA 215,127,216,59,6,255,255,255
,255,255,255
2027 DATA 718,-1,-1,17,3,153,153,153
2028 DATA 718,-1,-1,20,4,153,153,153,1
53
2029 DATA 120,-1,-1,120,2,153,50
2030 DATA 159,-1,-1,50,2,153,99
2031 DATA 650,-1,-1,1,2,153,50
2032 DATA 95,-1,-1,8,2,153,255
2033 DATA 145,-1,-1,10,2,153,99
```

Get it right!

```
0 CAH (V)      70 LP1 (P)
1 CAJ (1)      80 FSG (M)
2 CAK (Y)      90 FJK (V)
3 CAL (O)     100 RY3 (K)
4 CAM (R)     110 PLS (H)
5 PU3 (U)     120 54J (Q)
10 4CP (G)    130 CW5 (6)
20 F6J (3)    140 WRN (6)
30 VFF (F)    150 J89 (J)
40 JOP (8)    160 VT5 (U)
50 3XF (A)    170 GCP (L)
60 9EJ (2)    180 W6P (J)

190 520 (3)
200 K7A (8)
210 V4F (H)
220 FL4 (7)
230 PE8 (K)
240 26G (R)
250 AEM (T)
260 PK6 (1)
270 XFN (D)
280 F71 (J)
290 FM6 (2)
300 VAQ (2)
310 YUU (Q)
320 JHF (U)
330 2HC (6)
340 DVS (L)
350 FLY (H)
360 MYU (K)

370 SLE (7)
380 K8L (C)
390 2D4 (N)
400 T81 (Y)
410 TCC (R)
420 WMW (T)
430 KMH (P)
440 UYJ (2)
450 XHD (L)
460 N2U (5)
470 NY4 (6)
480 6FU (O)
490 C18 (2)
500 649 (U)
510 VA5 (L)
520 7YO (5)
530 7H6 (T)
540 YM4 (V)

550 CJG (8)
560 FTH (F)
570 46Q (1)
580 TTK (P)
590 DYW (R)
600 XCK (V)
610 2C3 (O)
620 F82 (5)
630 A6L (5)
640 Q88 (N)
650 9AS (Y)
660 XCQ (K)
670 H6P (J)
680 G9A (C)
690 QE2 (M)
700 LR9 (3)
710 P5E (K)
720 OHY (9)

730 L2S (W)
740 HAO (M)
750 PNE (7)
760 9K9 (M)
1000 RQS (E)
1001 RW1 (W)
1002 S29 (N)
1003 S7J (P)
1004 YXY (O)
1005 Y2P (D)
1006 Y4X (R)
1007 Y76 (4)
1008 Y9F (1)
1009 HEE (H)
1011 1CF (Y)
1012 1FP (8)
1013 1JX (Q)
1014 1N6 (J)

1015 1RF (Y)
1016 1UP (9)
1017 1XX (Q)
1018 226 (L)
1019 UCU (3)
1020 U53 (A)
1021 U8C (C)
1022 UCL (L)
1023 UFU (3)
1024 UK3 (C)
1025 UNC (C)
1026 URL (H)
1027 J4X (L)
1028 2YA (5)
1029 V70 (F)
1030 2EE (O)
1031 14Y (M)
1032 013 (F)

1033 YUC (V)
1999 R16 (M)
2000 SJT (E)
2001 RXW (F)
2002 S1W (E)
2003 S4W (F)
2004 FE2 (6)
2005 DEH (7)
2006 DGH (6)
2007 DHO (Q)
2008 DKO (7)
2009 EW2 (N)
2010 HU5 (Y)
2011 JSN (4)
2012 K2N (X)
2013 KCN (7)
2014 T2L (7)
2015 JYN (V)

2016 K8N (6)
2017 KJN (Y)
2018 T8L (X)
2019 FGW (S)
2020 JFM (W)
2021 F81 (G)
2022 F6Q (3)
2023 F8W (N)
2024 JGU (P)
2025 FEG (2)
2026 FH3 (K)
2027 SXS (7)
2028 UAN (D)
2029 EPG (F)
2030 FGE (S)
2031 FLK (U)
2032 FTY (U)
2033 FEE (D)
```



The stars fortell

Calculate your astrological birth time for use in horoscopes. DAVE BALL shows you how

AFTER reading the letter from John Upton in the October 1987 issue of *Atari User* asking for information about astrology programs for the 8 bit Atari, and knowing from bitter experience how rare they are, I decided to write this program to calculate a necessary figure called the sidereal time.

We all have a birth time, but this is given as solar time, and is based on the Earth's rotation around the Sun.

However, the Sun is moving as well, so the stars and the zodiac appear to move a small distance westward each night.

The duration of the Earth's rotation with respect to the stars is about 3 minutes 56 seconds shorter every day. To attempt to standardise everything, astrologers use sidereal time, which is based on the movements of the planets relative to Earth.

When calculating a horoscope, tables known as Ephemeris are used. These are compiled by the Astronomer Royal and are based on sidereal time. So, if you want to produce a horoscope for yourself you have to change your birth time to sidereal time – not an easy task.

Many calculations are used to find the sidereal time and reference to various tables is required. However, this program only requires to know four things to work it out for you:

- Date of birth.
- Time of birth.
- Longitude of birth place in degrees.
- Direction of birth place – east or west.

The first thing you have to decide is whether your birth date falls inside British summer time (BST) – or double British summer time (DBST) during the years 1941 to 1947. Lines 100 to 320 sort this out.

This is achieved by converting your birth date to the number of days in that year – for example, February 7, 1968 will become 38 days (31 for January + 7 for February).

The program then uses a READ command in line 190 to find the two numbers for the year of birth and checks to see if the figure falls between them. For example, for 1968 the two numbers are 49 and 366 (February 18 to December 31). Our figure for the 7th – 38 – doesn't fall between them so BST doesn't apply.

This figure is then subtracted from the birth time – the routine between lines 330 to 390 does all this for you.

Next you have to find an Ephemeris – the sidereal time for midnight on January 1 – in the year of your birth. This is always six hours and several minutes.

The final calculations

The extra minutes are found by lines 400 to 480. By referring back to our Ephemeris we would now have to add figures for the month (lines 490 to 550) and the day (lines 560 to 610).

Now we have to either add or subtract an allowance of four minutes for each degree of longitude East or West – lines 620 to 700 accomplish this.

Finally, you have to convert the minutes to hours. If this is over 24 hours you have to subtract 24 to give the sidereal time.

The program will calculate the BST for the years 1930 to 1977 only. Additional data may be added if required by converting the first date of BST and the last date of BST to the total days of the relevant year. For 1929 the dates were April 21 (111 days) and October 6 (310 days).

If these figures were entered at the beginning of the data statement in line 290 the dates covered would extend from 1929 to 1977.

However, remember to add one to your figures if it is a leap year and if your dates are after February 29.

Any alterations to the data statements will require a suitable alteration to line 90 – which stops the program accepting a date it cannot deal with – and line 190, where *Q* is the year at the start of the data.

I have deliberately not limited the read statements in lines 190, 400, 490 and 560 to keep them within the amount of data, so that the program can be extended to other people's requirements with the minimum of alteration.

Open for expansion

In lines 460 to 480 the program contains the data for sidereal times from 1900 to the year 2000. So there is no need to alter or extend this if you alter the BST data.

The program leaves itself open for expansion, but it does do its job well and is accurate to plus or minus 30 seconds.

It is beyond the scope of this article to explain how to draw up a horoscope using the sidereal time, but your local library will have books on the subject containing all the help you will need.

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PROGRAM VARIABLES

DOB$	Date of birth
LON$	Longitude of birth place – East or West
TIME$	Time of birth
HR	Hour of sidereal time
MIN	Minutes of sidereal time
LP	Leap year
BST	British summer time (BST)
DBST	Double BST
LON	Longitude in degrees
D	Day of birth
M	Month of birth
Y	Year of birth

PROGRAM BREAKDOWN

1 – 36	Set up the screen and variables
40 – 90	Get your date of birth and convert it into days, months and years for use in the sidereal time formula
100 – 270	Calculate whether your date of birth is BST or DBST
280 – 320	Data used in calculating BST
330 – 440	Get your time of birth and calculate the number of minutes for that year
450 – 480	Data for years
540 – 580	Data for months
590 – 610	Data for day
620 – 690	Get the longitude and direction of your birth
700 – 750	Calculate and print your sidereal time in hours and minutes

```
1 REM SIDEREAL TIME CALCULATOR
2 REM BY DAVID BALL
3 REM (c)ATARI USER
4 REM USED IN CALCULATING HOROSCOPES
10 DIM DOB$(8),LON$(2),TIME$(4),HR(2),
MIN(2):LP=0:BST=0:DBST=0:LON=0:REM SET
 VARIABLES
20 GRAPHICS 0
30 SETCOLOR 2,0,0:POKE 752,1:REM SET S
CREEN COLOR AND CANCEL CURSOR
35 POSITION 8,1:? "SIDEREAL TIME CALCU
LATOR"
36 POSITION 8,2:? "-------------------
-----"
40 ? :? "ENTER DATE OF BIRTH ":? "(i.e
. 01/01/88 )";
50 INPUT DOB$
60 TRAP 40:D=VAL(DOB$(1,2)):M=VAL(DOB$
(4,5)):Y=VAL(DOB$(7,8)):REM CONVERT DO
B TO DAYS MONTHS YEARS
70 IF D<1 OR D>31 THEN 20
80 IF M<1 OR M>12 THEN 20
90 IF Y<30 OR Y>77 THEN 20
100 REM ***CALC BST***
110 IF M=1 THEN GOTO 180:REM IF JAN. G
OTO NEXT SECTION
120 RESTORE 130:FOR F=1 TO M-1:READ A:
NEXT F:X=A+D:REM HOW MANY DAYS FOR MON
THS
130 DATA 31,59,90,120,151,181,212,243,
273,304,334
140 IF Y/4=INT(Y/4) THEN LP=1:REM LEAP
 YEAR?
150 IF LP=1 AND M>3 THEN X=X+1:REM ADD
 A DAY FOR LEAP YEAR
160 IF M=2 AND D=29 THEN X=X+1:REM CHE
CK FOR 29TH FEB,ADD A DAY IF YES
170 GOTO 190
180 X=D
190 RESTORE 280:Q=30:REM GET DAYS OF Y
EAR STARTING 1930
200 READ A,B:IF Q=Y THEN GOTO 230:REM
GET FIRST & LAST DAYS OF BST,IF YEAR O
F BIRTH GOTO NEXT SECTION
210 Q=Q+1:GOTO 200
220 REM COMPARE DAYS IN YEAR WITH DAYS
 IN BST,IF EQUAL THEN BST OR DBST APPL
IES
230 IF X>=A AND X<=B THEN BST=1
240 IF Y=45 AND X>=0 AND X<=290 THEN D
BST=1
250 IF Y=47 AND X>=75 AND X<=306 THEN
DBST=1
260 IF Y>=41 AND Y<=44 THEN BST=BST+1
270 BST=BST+DBST
280 REM ****DATA FOR BST ****
290 DATA 103,278,109,277,108,276,99,28
1,112,280,104,279,110,278,108,276,100,
275,106,323,56,366,124,222,95,221
300 DATA 94,227,93,261,92,196,104,279,
103,222,74,305,93,303,106,295,105,294,
111,300,109,277,101,276,107,275
310 DATA 113,281,104,279,110,278,109,2
77,101,276,85,302,84,301,90,300,82,299
,80,297,79,296,78,302,49,366,0,365
320 DATA 0,365,0,304,79,303,77,301,76,
300,75,299,81,298,79,296
330 ? :? "ENTER TIME OF BIRTH "
340 ? "(i.e.0215)";:INPUT TIME$
350 TRAP 330:HR=VAL(TIME$(1,2)):MIN=VA
L(TIME$(3,4))
360 IF HR<0 THEN 330
370 IF HR>23 AND MIN>59 THEN 330
380 IF MIN<0 OR MIN>59 THEN 330
390 HR=HR-BST:HR=HR+6
400 RESTORE 450:Q=0:REM GET MINUTES FO
R YEAR
410 READ A:IF Q=Y THEN GOTO 430
420 Q=Q+1:GOTO 410
430 MIN=MIN+A
440 IF M=1 THEN GOTO 530
450 REM **DATA FOR YEARS**
460 DATA 41,40,39,38,37,40,39,38,37,40
,39,38,37,40,39,38,37,40,39,38,37,40,3
9,38,37,41,40,39,38,41,40,39,38,41
470 DATA 40,39,38,41,40,39,38,41,40,39
,38,41,40,39,38,41,40,39,38,41,40,39,3
8,42,41,40,39,42,41,40,39,42,41,40,39
480 DATA 42,41,40,39,42,41,40,39,42,41
,39,42,41,40,39,42,41,40,39,42,42,41,4
0,43,42,41,40,43,42,41,40
490 RESTORE 550:Q=2
500 READ A:IF Q=M THEN GOTO 520
510 Q=Q+1:GOTO 500
520 MIN=MIN+A
530 IF D=1 THEN GOTO 620
540 REM ****DATA FOR MTH****
550 DATA 122,232,355,473,595,714,836,9
58,1076,1199,1317
560 RESTORE 590:Q=2
570 READ A:IF Q=D THEN GOTO 610
580 Q=Q+1:GOTO 570
590 REM ****DATA FOR DAY****
600 DATA 4,8,12,16,20,24,28,32,35,39,4
3,47,51,55,59,63,67,71,75,79,83,87,91,
95,99,103,106,110,114,118
610 MIN=MIN+A
620 ? :? "ENTER LONGITUDE "
630 ? "(i.e.1 or 3.5)";
640 TRAP 620:INPUT LON:IF LON<0 OR LON
>79 THEN 620
650 ? :? "ENTER EAST OR WEST";:INPUT L
ON$
660 IF LON$<>"E" AND LON$<>"W" THEN 65
0
670 IF LON$="W" THEN MIN=MIN-(LON*4)
680 IF LON$="E" THEN MIN=MIN+(LON*4)
690 IF LP=1 THEN MIN=MIN+4
700 REM ***CALC HRS + MINS***
710 H=INT(MIN/60)
720 HR=HR+H:MIN=MIN-(H*60)
730 IF HR>=24 THEN HR=HR-24
740 ? :? "SIDEREAL TIME IS ";HR;" : ";
MIN
750 END
```

Get it right!

1 CAJ (W)	220 D3T (U)	490 9GV (8)
2 CAK (3)	230 PWD (C)	500 UJJ (C)
3 CAL (V)	240 P5G (X)	510 2QA (8)
4 CAM (4)	250 RHR (5)	520 VWV (T)
10 6SW (C)	260 GHF (D)	530 D2S (7)
20 UVL (4)	270 04T (H)	540 DCW (G)
30 UDO (D)	280 DUT (S)	550 SL4 (L)
35 U3R (J)	290 DND (2)	560 94W (1)
36 7U4 (V)	300 DGE (E)	570 VEH (O)
40 38P (1)	310 EAP (T)	580 3LJ (O)
50 VRJ (E)	320 2UC (O)	590 DYW (F)
60 DY8 (P)	330 WC7 (P)	600 YQ9 (D)
70 6GL (W)	340 MJJ (9)	610 VSW (V)
80 6KW (K)	350 OPA (E)	620 KMS (P)
90 D9J (F)	360 5Q5 (2)	630 773 (9)
100 CUS (O)	370 X71 (6)	640 W2C (Q)
110 TFJ (R)	380 Y3L (L)	650 HRM (4)
120 GAK (R)	390 DAA (2)	660 CDS (A)
130 7MY (H)	400 CUM (A)	670 9N2 (J)
140 SVN (1)	410 UNM (4)	680 9LK (W)
150 URG (3)	420 2U8 (4)	690 MDJ (5)
160 SD6 (E)	430 W1U (Q)	700 CUY (E)
170 RC7 (X)	440 D76 (6)	710 TAD (8)
180 E59 (6)	450 DGV (G)	720 HHR (D)
190 DU5 (E)	460 C49 (F)	730 MWQ (8)
200 DEN (W)	470 E1U (4)	740 3SS (F)
210 2Q1 (Q)	480 W9V (V)	750 DP7 (V)

Autoload your Toolkit...

MICK RANDLE presents a utility to enhance the capabilities of the Atari User utility



THERE was a utility program called Load'n'Run in the June 1988 issue of *Atari User*. It provided a quick and easy way to Autorun a Basic program from a Dos 2.5 disc via a machine code AUTORUN.SYS file.

Dos only allows one Autorun file per disc, and this can sometimes cause problems. Although it is possible to combine two or more such files, it's very much a hit or miss affair and isn't recommended.

So where does that leave the owner of the *Atari User* Toolkit which is in itself an Autorun file? Wouldn't it be nice to be able to load Dos 2.5, install a ramdisc, load Toolkit and run a Basic menu program, all on power-up?

Well it can be done. A program as user friendly as Toolkit wouldn't leave out such a useful feature. The necessary code is built into the program and all that is required is a key number in the right place to invoke the Autorun routine. This is where our short program comes in.

Type it in and use Get It Right II to check your work. All lines from 2000 onward were published as part of the Load'n'Run program last month. If you typed it in you can save yourself some work by listing those particular lines to disc by typing LIST "D:Q",20000,32000.

Then type NEW and enter "D:Q" to transfer them back into memory and begin typing in this program. You can then save a copy of the complete program on disc before running it.

You will be prompted to insert a Toolkit workdisc into drive one and press Return when ready.

Don't try to alter the Toolkit master disc – only use a Toolkit utility disc. Some error checking is built into the program but it is best not to tempt fate.

The program will then open an IOCB channel to update the Toolkit file, use the POINT statement to position the file pointer to the correct position and write the key number to make Toolkit Autorun a program.

Every time you boot the disc in future this customised version of Toolkit will print a Ready soon message while it is loading and running the first Basic program it finds on the disc. The only stipulation is that the Basic program's filename must contain the .BAS extension.

The Load'n'Run program from the June issue offers a greater scope for creative introduction screens, where as Toolkit offers a bare bones facility. Both approaches have their merits, so you have not wasted your time if you entered Load'n'Run.

Finally, a note of caution. Feel free to adapt the program for your own use, but remember that messing about with disc files using NOTE and POINT can be potentially disastrous. It's very easy to scramble a file, or even an entire disc, thus making it impossible for Dos to read it.

If you wish to experiment, do so on backup copies only. If you don't, and lose valuable programs, don't blame me or *Atari User*!

```
1 REM ************************
2 REM * TOOLKIT AUTORUN MOD. *
3 REM *    BY MICK RANDLE    *
4 REM *    (c) ATARI USER    *
5 REM ************************
10 POKE 82,2:GRAPHICS 0:POKE 559,0:SET
COLOR 2,0,2:SETCOLOR 4,0,2:POKE 752,1
20 POKE 16,112:POKE 53774,112
97 REM
98 REM Screen display initialisation
99 REM
100 POSITION 2,0:? "     TOOLKIT AUTORU
N MODIFICATION     "
105 POSITION 2,1:? "            BY MICHA
EL RANDLE          "
110 POSITION 3,5:? "ALTER THE STANDARD
 TOOLKIT UTILITY"
115 ? " TO AUTORUN THE FIRST BASIC PRO
GRAM"
120 ? " FOUND ON THE TOOLKIT UTILITY D
ISK."
125 POSITION 2,11:? "┌─────────────────
─────────────────┐"
130 POSITION 2,12:? "│  Mount initiali
sed TOOLKIT disk  │"
135 ? "├─────────────────────────────
───────┤"
140 ? "│   DO NOT USE TOOLKIT MASTER DI
SK    │"
145 ? "├─────────────────────────────
───────┤"
150 ? "│ WARNING: THIS PROGRAM WILL AL
TER   │"
155 ? "│           THE TOOLKIT UTILITY
      │"
160 ? "├─────────────────────────────
───────┤"
165 ? "│ Press RETURN to make alterati
on    │"
170 ? "│                              
      │"
175 ? "│ Press START to return to BASI
C     │"
180 ? "└─────────────────────────────
───────┘"
185 POSITION 36,19:POKE 559,34
190 POKE 764,255:GOSUB 2000:IF I<>12 T
HEN 190
197 REM
198 REM Tell user to wait a bit
199 REM
200 FOR Q=9 TO 17:POSITION 2,Q:? "
                                   ":NEXT
 Q:REM 35 SPACES
210 ? "┌─────────────────────────────
───────┐":? "│                              
          │"
```

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```
220 ? "|  MODIFYING TOOLKIT AUTORUN FI
LE   |":? "|
         |"
297 REM
298 REM Modify Toolkit
299 REM
300 TRAP 3000:OPEN #2,12,0,"D1:AUTORUN
.SYS":NOTE #2,X,Y
310 FOR Q=1 TO 6:READ DATA:GET #2,I:IF
 I<>DATA THEN 500
320 NEXT Q
330 Y=Y+476:I=INT(Y/125):X=X+I:Y=Y-I*1
25
340 POINT #2,X,Y:PUT #2,27:CLOSE #2
397 REM
398 REM tell user it's all done
399 REM
400 POSITION 2,19:? "|          TOOLKIT
 MODIFIED          |":? "|
                    |"
410 ? "|      PRESS  RETURN  TO CONTINUE
    |":POKE 764,255
420 IF PEEK(764)=255 THEN 420
430 RUN
500 POSITION 2,19:? "K|      THIS IS NOT
 A TOOLKIT DISK    |"
510 ? "|
    |"
520 ? "|      PRESS  RETURN  TO CONTINUE
    |":POKE 764,255
530 IF PEEK(764)=255 THEN 530
540 RUN
550 DATA 255,255,221,61,41,64
1997 REM
1998 REM Subroutine to flash cursor
1999 REM
2000 FOR Q=0 TO 15:I1=PEEK(53279):I=PE
EK(764):? "?←";:IF I<>255 OR I1<>7 THE
N 2020
2010 NEXT Q:FOR Q=0 TO 15:I1=PEEK(5327
9):I=PEEK(764):IF I1=7 AND I=255 THEN
? "?←";:NEXT Q:GOTO 2000
2020 Q=16:IF I1<>7 THEN POKE 82,2:GRAP
HICS 0:NEW
2030 IF I=39 THEN POKE 694,ABS(PEEK(69
4)-128):GOTO 2000
2040 RETURN
2997 REM
2998 REM Error trapping routine
2999 REM
3000 IF PEEK(195)=167 THEN 500
3010 POSITION 8,19:? "K ERROR ";PEEK(1
95);" ENCOUNTERED ":? "|
                    |"
3020 POSITION 8,21:? " PRESS RETURN TO
 GO ON K":CLOSE #1:POKE 764,255
3030 IF PEEK(764)=255 THEN 3030
3040 RUN
```

Get it right!

1 CAJ (W)	170 8V1 (F)	420 KXH (1)
2 CAK (3)	175 W5V (C)	430 DQM (K)
3 CAL (V)	180 1W7 (Y)	500 05N (H)
4 CAM (4)	185 UQN (F)	510 845 (V)
5 CAN (W)	190 JS1 (F)	520 7MP (C)
10 RJ6 (V)	197 EES (5)	530 L5J (C)
20 MJV (F)	198 EGS (E)	540 DUN (T)
97 DK9 (T)	199 EJS (5)	550 J39 (E)
98 DP9 (9)	200 N9F (8)	1997 EUN (E)
99 DT9 (T)	210 4MF (U)	1998 EVN (D)
100 SHC (8)	220 G66 (W)	1999 EWN (E)
105 2XU (3)	297 EET (N)	2000 EUH (V)
110 HEW (H)	298 EGT (X)	2010 PQ1 (P)
115 UDU (C)	299 EJT (N)	2020 UG1 (V)
120 XWR (O)	300 300 (M)	2030 OSK (D)
125 1UY (Y)	310 AK6 (W)	2040 VKL (C)
130 61E (U)	320 PQ3 (H)	2997 EUP (8)
135 1LN (V)	330 EAF (1)	2998 EVP (A)
140 CNC (7)	340 YVL (3)	2999 EWP (8)
145 1QN (3)	397 EEU (A)	3000 S7Q (Q)
150 FFF (O)	398 EGU (O)	3010 4YK (C)
155 3K3 (A)	399 EJU (A)	3020 GVU (R)
160 1NN (F)	400 WGE (Q)	3030 SLJ (J)
165 ACO (5)	410 7HN (O)	3040 DFL (8)

Locate that faulty heart...

LEN GOLDING continues his look at Atari Basic with another peek at the LOCATE command

MOST of the keyboard characters you need for drawing dungeon plans, terrain maps and other works of art are locked away in the lower case character set and getting at them is a bit difficult.

It's easy enough to flip between upper and lower case sets while you're in one of the new text modes. Use POKE 756,224 to select the lower case set and POKE 756,226 to return to upper case. But there's a snag. Try this:

```
10 GRAPHICS 1
20 POKE 756,224
```

What happens? The screen fills up with orange hearts. This could be the end of a beautiful friendship...

Actually, your computer is not to blame – it's simply following instructions to clear the screen by printing a space at every position. Unfortunately, when the lower-case set is selected, the space character turns into a heart.

There are two ways round this. The first is to make the hearts invisible by turning them to the same colour as the background – SETCOLOR 2,0,0 will do the trick. The hearts are still there, but now you can't see them and any other orange characters will disappear too. However all the yellow, blue and violet characters – including hearts – remain available.

The second method is to modify the character set, replacing the heart with a blank space. Program I will perform the necessary cardiac surgery for you. It uses machine code, so just treat it as a black box routine which can easily be incorporated into your own Basic programs.

```
5 REM Program 1: Getting rid of the "h
eart" characters
10 FOR X=0 TO 45:READ D:POKE 1745+X,D:
NEXT X:REM Install machine code
20 DATA 104,104,104,133,206,173,244,2,
133,204,162,4,160,0,132,203,132,205,17
7,203,145,205,136
30 DATA 208,249,230,204,230,206,202,20
8,242,198,206,198,206,169,0,160,7,145,
205,136,16,251,96
40 P=PEEK(106)-4:POKE 106,P:GRAPHICS 2
50 X=USR(1745,P):POKE 756,P+2:REM No m
ore hearts now!
60 INPUT N:COLOR N:PLOT 9,4:GOTO 60:RE
M This line for illustration only
```

Program I: Getting rid of the heart characters

Line 60 is there simply for illustration – it lets you type numbers from 0 to 255 and prints the corresponding character on screen. It also keeps the communication channel open by preventing the program from ending. In a real program of course, line 60 should be deleted.

After running Program I your character set will be completely heartless, but every other lower case character is available in any of the four colours. You can flip between upper and lower case character sets at any time – use POKE 756,224 to select upper case characters, or repeat the USR call at line 50 to install the new lower case set. This can produce some intriguing effects on screen.

Now back to LOCATE, which you will certainly need for any Basic arcade games.

As you might have guessed, when the computer is in Graphic modes 1, 2, 17 or 18, the LOCATE command returns the letter/colour code, not just an Ascii number. See Table II last month.

For example:

```
LOCATE 5,8,Q
```

will store in Q the letter/colour code for the character which is currently residing at screen co-ordinates 5,8. If it's a yellow ! symbol – a torpedo, maybe? Q will take the value of one.

If you're using lower case letters and the character at 5,8 is a blue diamond, then Q will contain 192.

You should have no great difficulty converting our previous joystick control routines for use with Graphic Modes 1 or 2. However, there are

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```
5 REM Program 2: 8-directional movemen
t over a background
10 GRAPHICS 1:FOR ROW=0 TO 19:FOR COLU
MN=0 TO 19:COLOR 46:PLOT COLUMN,ROW:NE
XT COLUMN:NEXT ROW
20 XMAX=19:XMIN=0:YMAX=19:YMIN=0:X=9:Y
=9:X1=X:Y1=Y:GOTO 70
30 S=STICK(0):IF S=15 THEN 30
40 X1=X+((S=7 OR S=6 OR S=5) AND (X<XM
AX))-((S=11 OR S=10 OR S=9) AND (X>XMI
N))
50 Y1=Y+((S=13 OR S=5 OR S=9) AND (Y<Y
MAX))-((S=14 OR S=6 OR S=10) AND (Y>YM
IN))
60 COLOR Q:PLOT X,Y
70 LOCATE X1,Y1,Q:COLOR 10:PLOT X1,Y1:
X=X1:Y=Y1:GOTO 30
```

Program II: 8-directional movement over a background

other ways of programming joystick-controlled movement.

Program II shows one of the shortest possible routines, using a system known as Boolean logic. Lines 40 and 50 perform all the joystick reading, boundary checking and position updating functions, in a fraction of the space required by conventional Basic.

We'll explain Boolean techniques in detail at a later date. For now, just treat the routine as a useful building block, without worrying about how it works. The screen boundaries – XMAX, XMIN, YMAX, YMIN – are set at line 20, and will need changing if you want to use a different graphics mode.

The moving character's initial position depends upon the values of X and Y, again at line 20. This routine is a little slower than our previous ones, but the reduction in program length and complexity is worth a small sacrifice in speed.

To round things off, Program III shows all the new techniques in action. It provides the framework for a game based on the specifications we suggested previously. You use the joystick to fly an asterisk around the screen, dropping invisible bombs on various objects.

Although it's very simple and hasn't much play value as it stands, the program illustrates many of the features found in real arcade games. It uses sound, colour and movement with successful hits removing the target from the screen. The number of missiles is limited and the program has a built-in scoring system. If nothing else, it will serve as a useful example when you come to write your own games.

● *Next month we'll show you how to produce a different playfield every time using random numbers – and how to make your targets strike back.*

```
5 REM PROGRAM 3: Simple search-and-des
troy game
10 GRAPHICS 1:POKE 752,1:BOMBS=20:HITS
=0
20 FOR ROW=0 TO 19:FOR COLUMN=0 TO 19:
COLOR 142:PLOT COLUMN,ROW:NEXT COLUMN:
NEXT ROW
30 COLOR 65:REM Orange "A"
40 PLOT 3,2:PLOT 3,3:PLOT 3,4:PLOT 18,
16:PLOT 18,17:PLOT 18,18
50 COLOR 83:REM Orange "S"
60 PLOT 8,9:PLOT 9,9:PLOT 10,9:PLOT 8,
10:PLOT 9,10:PLOT 10,10
70 COLOR 70:REM Orange "F"
80 PLOT 2,16:PLOT 18,2:PLOT 16,4:PLOT
9,2:PLOT 8,18:PLOT 15,14:PLOT 4,10:PLO
T 18,10
90 XMAX=19:XMIN=0:YMAX=19:YMIN=0:X=0:Y
=0:X1=X:Y1=Y:GOTO 150
100 T=STRIG(0):IF T=0 THEN GOSUB 160:I
F BOMBS=0 THEN ? "GAME OVER";:END
110 S=STICK(0):IF S=15 THEN 100
120 X1=X+((S=5 OR S=6 OR S=7) AND (X<X
MAX))-((S=9 OR S=10 OR S=11) AND (X>XM
IN))
130 Y1=Y+((S=5 OR S=9 OR S=13) AND (Y<
YMAX))-((S=6 OR S=10 OR S=14) AND (Y>Y
MIN))
140 COLOR Q:PLOT X,Y
150 LOCATE X1,Y1,Q:COLOR 10:PLOT X1,Y1
:X=X1:Y=Y1:GOTO 100
160 REM Trigger subroutine
170 ? CHR$(125):REM Clear text window
180 FOR P=30 TO 200:SOUND 0,P,10,8:NEX
T P:SOUND 0,0,0,0
190 IF Q=65 THEN ? "AIRFIELD!":GOTO 24
0
200 IF Q=83 THEN ? "SHIPYARD!":GOTO 24
0
210 IF Q=70 THEN ? "FUEL DUMP":GOTO 24
0
220 ? "MISSED!":FOR W=1 TO 200:NEXT W:
GOTO 310
230 REM Explosion sound
240 FOR V=14 TO 4 STEP -1:FOR W=1 TO 5
0:NEXT W
250 SOUND 0,200,8,V:SOUND 1,100,8,V:SO
UND 2,255,8,V:NEXT V
260 FOR V=4 TO 0 STEP -1:FOR W=1 TO 50
:NEXT W
270 SOUND 0,300,4,V:SOUND 1,100,4,V:SO
UND 2,255,4,V:NEXT V
280 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND
2,0,0,0
290 Q=142:REM Replace the target lette
r with a dot, on next move
300 HITS=HITS+1
310 BOMBS=BOMBS-1
320 ? CHR$(125):? "HITS=";HITS;"   BOM
BS REMAINING=";BOMBS
330 RETURN
```

Program III: Simple search and destroy game

Choose you

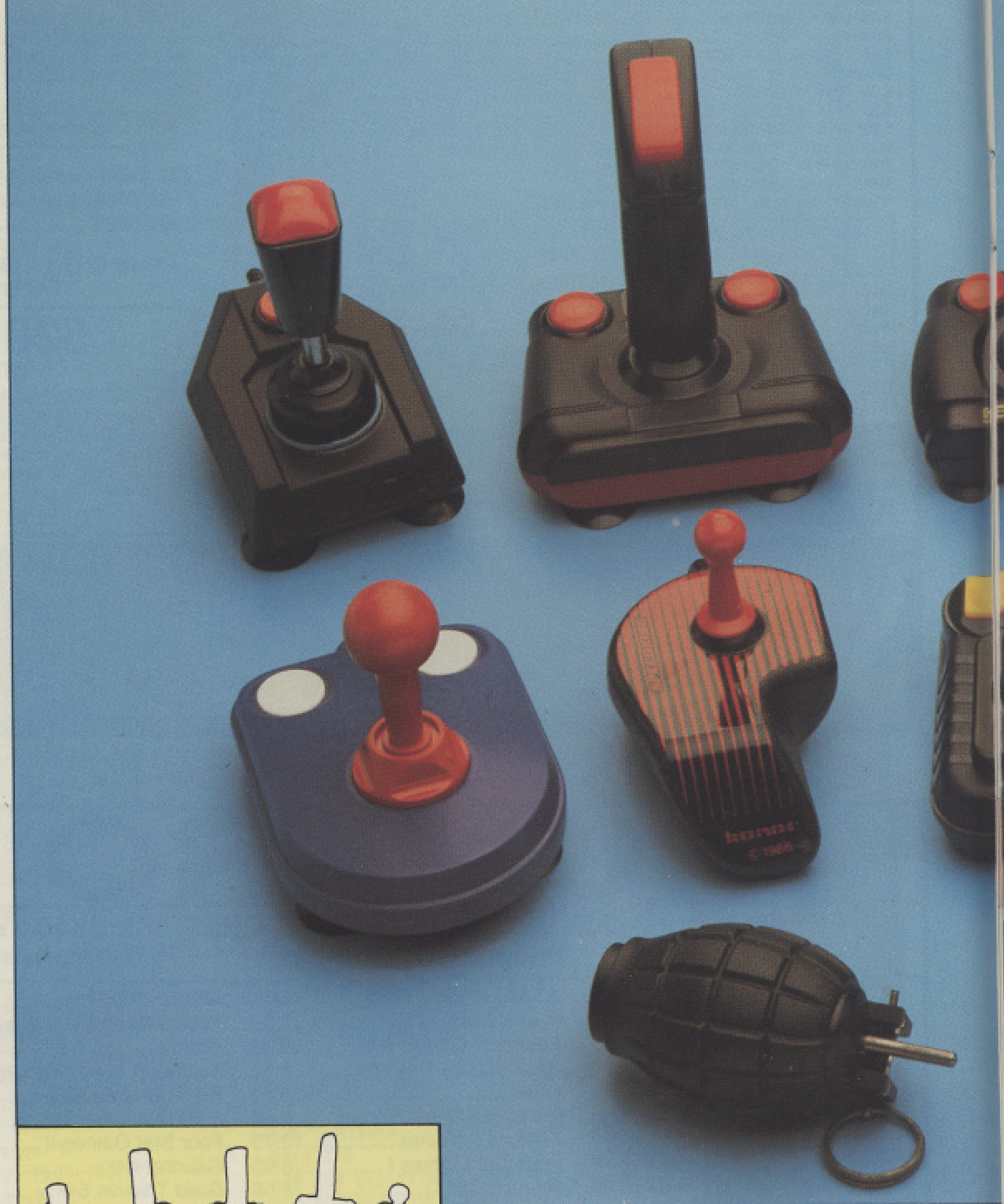
IAN SHARPE tests out the latest joysticks

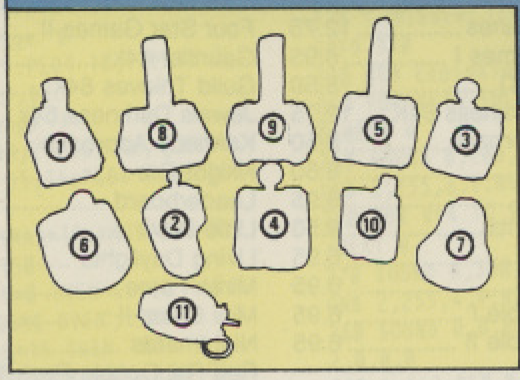
THERE is a bewildering array of joysticks on the market, and often you don't get a chance to test your choice before parting with your money. To help you decide we've been putting a collection of killing machines through their paces.

It would be impossible to test every joystick available, so we picked a representative sample. I don't know if we were particularly lucky with our selection, or whether standards have improved a lot recently, but none of the sticks could be described as really bad.

The first thing to emerge was that joysticks are a very personal thing. We all agreed that some were good, but there were others that one person liked but another didn't. So to get a broad opinion four testers took part, all comments are a consensus, and ratings have been averaged.

Table I gives our order of preference, regardless of price. The order is based on personal choice after extensive play testing. This is a highly subjective assessment, so in an attempt to be a bit more scientific we devised some programs to put a figure on aspects of performance. The first two measured how many times we could press the fire button or wiggle the stalk in 10 seconds. The third test recorded how precisely we could control a moving cursor to trace the path of a wavy line.





Test results

Surprisingly the test results didn't bear much relation to personal preference. We think this is due the fact that the sticks which performed better had greater potential than is required in most games. Also, when playing, a lot depends on comfort and feel, though how you quantify that we don't know.

Another possible reason is that when performing a test the tendency is to concentrate on the stick, whereas in a game you concentrate on the screen and your joystick control becomes less self conscious.

Some sticks come in two versions, with and without autofire. All are operated by either leaf switch or microswitch. There is another type of switch found in joysticks, the sort that looks like a metal bubble. These were quite common at one time, but they are not very robust and none of the sticks had this type fitted.

The leaf variety is a piece of spring steel pushed against a contact, while micro switches are a proper self-contained switch unit. In general micro switches are more expensive, last longer, and give better feel.

Long term durability is hard to test. Common sense says that a steel-shafted microswitch joystick should last longer than an all-plastic leaf switch one, but in our experience unless you give a stick rough treatment this only shows up after a very long period of use, by which time advances in design might make you want to upgrade anyway.

Of course your final choice would be modified by how much money you want to spend, whether you prefer a hand-held or tabletop model, and your liking for the ball-on-a-stick type or those with a moulded grip.

Ram Delta 1

Angular styling and gear-lever type stalk distinguish Ram's offering. A rubber bush around the shaft provides just the right amount of resistance and springiness. Precision is very good, and the overall feel is very smooth.

our weapon



Konix Speedking 2

This is purely a hand-held device which has been carefully designed to fit your hand. The action is fairly short travel and very precise. You are forced by the shape to hold the base in your left hand, and move the stalk with your right. It,s a pity a left-hand version isn't available.

The only other quibble is that for some people the base unit is a little on the large side, and the unaccustomed position of the fire button might make your hand ache slightly at first. However after a couple of days you'll find your grip strengthening, and the Speedking then becomes a very efficient tool indeed.

We were very surprised it didn't do better in the speed and precision tests because we got some impressive scores with it.

Competition Pro Extra 3

We didn't have to take this one apart to look at the construction because it's got a sexy see-through case. It is very like the Euromax Professional except for a rubber bung round the stalk to give better response.

The one complaint with the review model was that if pushed hard against the stop, the stalk squeaks against the switch casings. Perhaps the switches aren't mounted with total rigidity, but having used this stick for several months it hasn't given any reliability problems.

Euromax Professional 4

At first this one seems unremarkable, but we all turned in some respectable scores with it. Perhaps it's the hall-mark of a good design that you don't have to pay much attention to the stick when you first use it. Of all the models on test, this one felt the most robust, though we can't say if the impression would be borne out after a lot of use.

Cheetah Mach 1+ 5

It's hard to define quite why this one feels right. Fundamentally the design is the same as many other sticks, but unlike many what happens on the screen matches what you are doing with your hand. We were never left puzzling why the sprite went one way when we meant it to go another. An excellent weapon.

Cruiser 6

Apart from not being coloured black and red, Cruiser's claim to fame is an adjustable collar allowing three stiffness settings. Like the Competition Pro, we found it had a nice firm precise feel and managed some good scores with it. It needs to be fixed to a surface for best results and doesn't make any concessions to hand holding.

Euromax Elite 7

The unusual shape fitted some hands well while others found it not to their taste. In play the Elite feels quite good and we've had one knocking about in the office for the past year. It is used regularly and has stood up to some heavy punishment.

Cheetah Special 8

Something of a contradiction, this one. Cheetah bills it as a breakthrough in joystick technology. As well as the normal direction and fire controls, the stalk can rotate slightly. Inside is an extra pair of switches which respond to the rotation. For this to work you need a two-joystick adapter to take the second plug.

You also need a game that is specially written to take advantage of the feature (we don't know of any) or at least has definable keys. Unless this idea catches on in a big way we can't see software houses writing games so

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that they aren't playable without this type of stick.

The contradiction is that for a joystick being billed as a break-through there isn't a microswitch in sight. In all other respects it feels like Cheetah's 125+, so you've got to decide whether the twist feature outweighs the otherwise average performance.

Cheetah 125+ 9

A basic leaf switch joystick with working autofire suitable for hand or tabletop. The action is not bad, but put alongside some of the microswitch models it seems a bit limp. If we hadn't tried it alongside other sticks, the 125+ would have made more of an impression. As far as scores went, we were no worse off with this one, and given that it's cheaper than all the rest is probably the best value for money.

Phasor One 10

On the face of it the pistol style is a good idea, and holding it in your hand before tackling a game it feels good. However, after 10 minutes in action we found that the fire button is not well placed for repeated use and we all got sore hands. Eventually your hand might strengthen sufficiently to compensate, but this still leaves another problem: We found that the narrowness of the grip made it easy for the stick to twist slightly in the hand and it was difficult to judge exactly which direction we were pulling the stalk. This often led to the on-screen movement being not what we expected.

Terminator 11

Shaped like a hand grenade, the fire button is a metal strip bearing on a button set in the casing. The stalk is a relatively thin metal rod. After the initial hilarity over its appearance had died down, one person really liked it while the other three gave it the thumbs down. Overall it doesn't feel as good as more conventional sticks, and it is not easy to play well with. Taking into account the price, this is the only one of the bunch we'd definitely avoid.

TEST RESULTS

	Shaft speed	Fire speed	Precision	Price	Autofire	Shaft type	Switch type
Konix Speedking	120	46	46	£11.99	N	Steel	M
Cheetah Mach 1+	135	45	51	£14.95	Y	Steel	M+L
Ram Delta	143	60	54	£9.99	Y	Steel	M
Competition Pro Extra	120	63	55	£16.49	Y	Steel	M
Cruiser	120	68	63	£9.99	N	Steel	M
Euromax Professional	132	66	65	£15.95	N	Steel	M
Euromax Elite	140	67	61	£10.95	N	Steel	M
Cheetah 125 Special	142	41	52	£12.99	Y	Plastic	L
Cheetah 125+	139	42	51	£8.95	Y	Plastic	L
Phasor one	133	49	44	£12.95	N	Steel	M
Terminator	120	47	46	£14.95	N	Steel	M

Table I: Joysticks in order of preference. M = Microswitch L = Leafswitch

CONTACTS

Konix Speedking
Konix Computer Products, Units 12-14, Sirhowy Hill Industrial Estate, Tredegar, Gwent NP2 4QZ. Tel: 0495 350101

Cheetah 125+, 125 Special, Mach 1+
Cheetah Marketing, Norbury House, Norbury Rd., Fairwater, Cardiff CF5 3AS. Tel: 0222 555525

Ram Delta
Ram Electronics (Fleet), Units 8/15/16 Redfields Industrial Park, Redfield Lane, Church Crookham, Hampshire GU13 ORE. Tel: 0252 850085/31

Competition Pro Extra
Dynamics Marketing, Coin House, Coin St., Royton, Oldham OL2 6JZ. Tel: 061-626 7222

Cruiser
Leisuresoft (Powerplay), Unit 2, Rothersthorpe Ave Trading Estate, Northampton NN4 9JN. Tel: 0262 602541

Euromax Elite and Professional
Euromax Electronics, Pinfold Lane, Bridlington, North Humberside YO16 5XR. Tel: 0262 602541

Phasor One
Britannia Software, Unit M28, Cardiff Workshops, Lewis Rd., Cardiff CF1 5EB. Tel: 0222 481135

Terminator
Robtek, Unit 4, Isleworth Business Complex, St Johns Rd., Isleworth, Middlesex TW7 6NL. Tel: 01-847 4457

CONCLUSION

Terminator and Phasor One shouldn't be dismissed out of hand because they might suit some people, but do make sure you spend 10 minutes with them before stabbing your piggy bank in the back.

The Cheetah 125+ is well worth considering if money is tight. It has a very light action and can't quite match the feel of microswitch models, but it's cheap, has a working autofire, and is certainly competent.

Whether it's worth paying extra for the Special which has much the same feel is open to question. For the same price you could have one of the microswitch models. Euromax Elite and Professional, and Cruiser are good reliable pieces of kit, and you won't be disappointed with them. We thought the Competition Pro had a slight edge, but there isn't much in it and you might think differently. The Ram Delta was that bit better again.

For us, though, Cheetah Mach 1+ and Konix Speedking were top of the heap. The choice is down to your preferred type, and how important autofire is to you.

Such is the difference in personal opinion over joysticks, we think it is vital that you try your choice before parting with any money.

This Toolkit is a MUST!

ATARI USER *exclusive!*

Programming becomes so much easier when you've got the right tools for the job. With this *Atari User* package you can add TEN new commands to Atari Basic to dramatically improve your performance. *PLUS* your Atari will generate meaningful error messages instead of cryptic numbers.

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CLICK Turns that sometimes annoying keyboard click on or off simply.

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REN Instantly renumbers your Basic programs in any line increment.

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LVAR Gives the name of all used variables and a list of all their occurrences.

CHANGE Alters the name of a variable at every occurrence in a program

STRIP Removes all REMs and reduces the size of the program.

LISTING Prints and includes the Atari special characters on an Epson printer.

£5.95 tape
£7.95 disc

TO ORDER PLEASE USE THE FORM ON PAGE 53

And boldly go where no man...

Take a trip around the milky way with NEIL FAWCETT as he evaluates an astronomy program for your 8 bit Atari

THE Atari Planetarium is an educational package designed to bring the wonders of the cosmos into your own front room – or at least your computer room.

For £29.99 you get one 5.25in disc and a comprehensive 115 page instruction manual. After booting up the disc – remember to hold down Start while switching on and remove all cartridges from older machines – you will be thrust into the main viewing screen.

Study it for a few minutes, and when you fail to understand what it all means this might be a good time to read the manual.

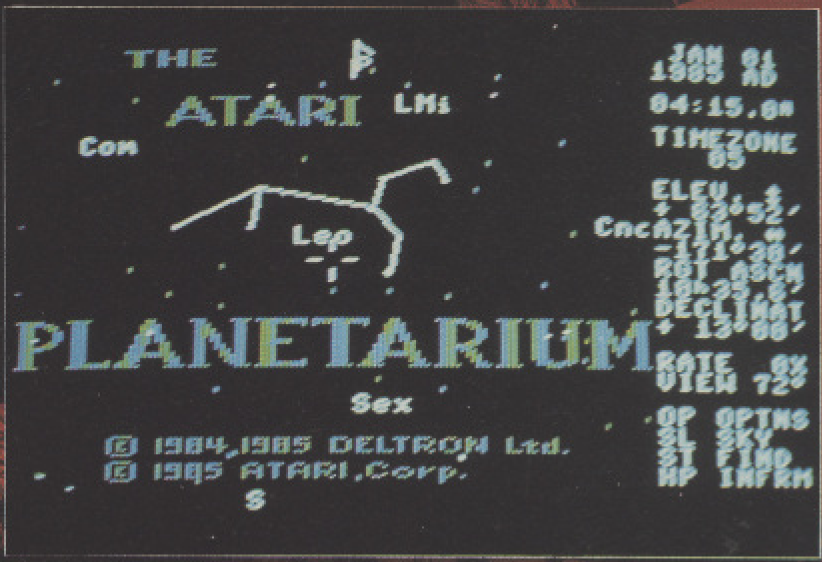
The first section details what the program can do – which is display the lo-cations of more than 1,200 stars, 88 constellations, more than 300 deep sky objects and Halley's Comet during its 1985-86 appearance.

A special Help function will identify any displayed object for you on a status line which scrolls along the bottom of the screen.

The ability to accelerate time allows you to view cosmic events in minutes rather than hundreds of years. You can also view the position of star fields 10,000 years in the past or future. And if you have a printer you can make a permanent record of any screen display you create.

The section on loading the main program is very well written and makes it impossible for you to go wrong. When loaded, the program defaults to Washington D.C. on January 1, 1985. But since it may not be New Year's Day and you don't

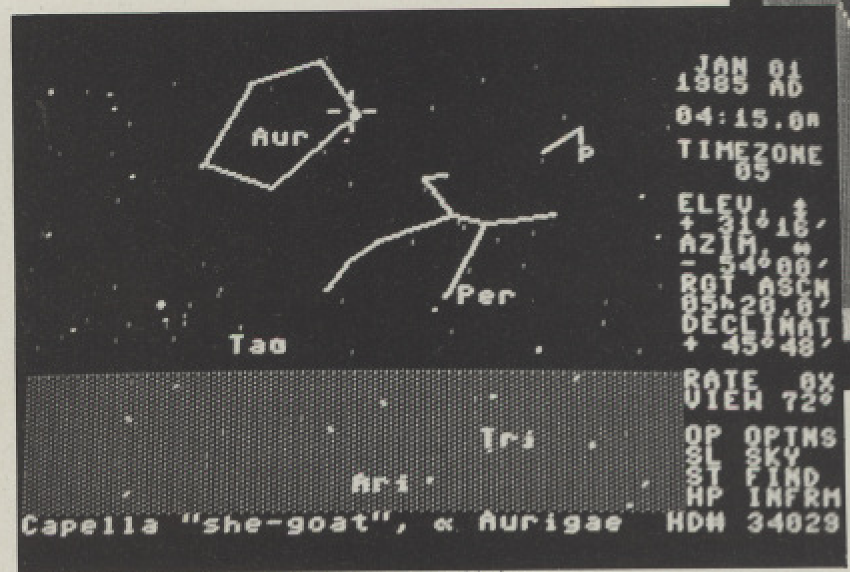
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The loading screen



A view of the Earth in map mode



You can go on a guided tour of the Universe

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happen to live in Washington you'll want to change the default settings.

Because the program has to be very precise when calculating astral objects you must enter the latitude and longitude of your present location – found via the Planetarium's built-in map of the earth. Just move the cursor to where you think you live and press Return.

Then you enter the correct time and date of the day you wish to view. Again this simple task is well explained in the manual.

Now the program has all the relevant user information it will calculate the positions of the sun, moon, planets and stars.

Four screen modes are used – Sky, Map, Set and Chart – accessed by highlighting the one you want in the data window to the right of the screen.

Once you have become accustomed to the commands and viewing modes you can move on to a guided tour of the universe. It starts off with a history of how ancient civilisations based religions on the stars and goes on to explain Earth's orbit around the Sun, celestial and ecliptic spheres and many other astronomical subjects.

The program can simulate just about any cosmic event you would want to watch. If you wish to see how the stars looked when Cicero viewed an almost total eclipse on June 21, 400 BC just key in the date and location and up it comes.

There is even a section dealing with the art of navigating using the Sun and stars, which was developed by ancient mariners.

Print outs are easy and Planetarium works with the Atari XMM801 printer or any Epson-compatible.

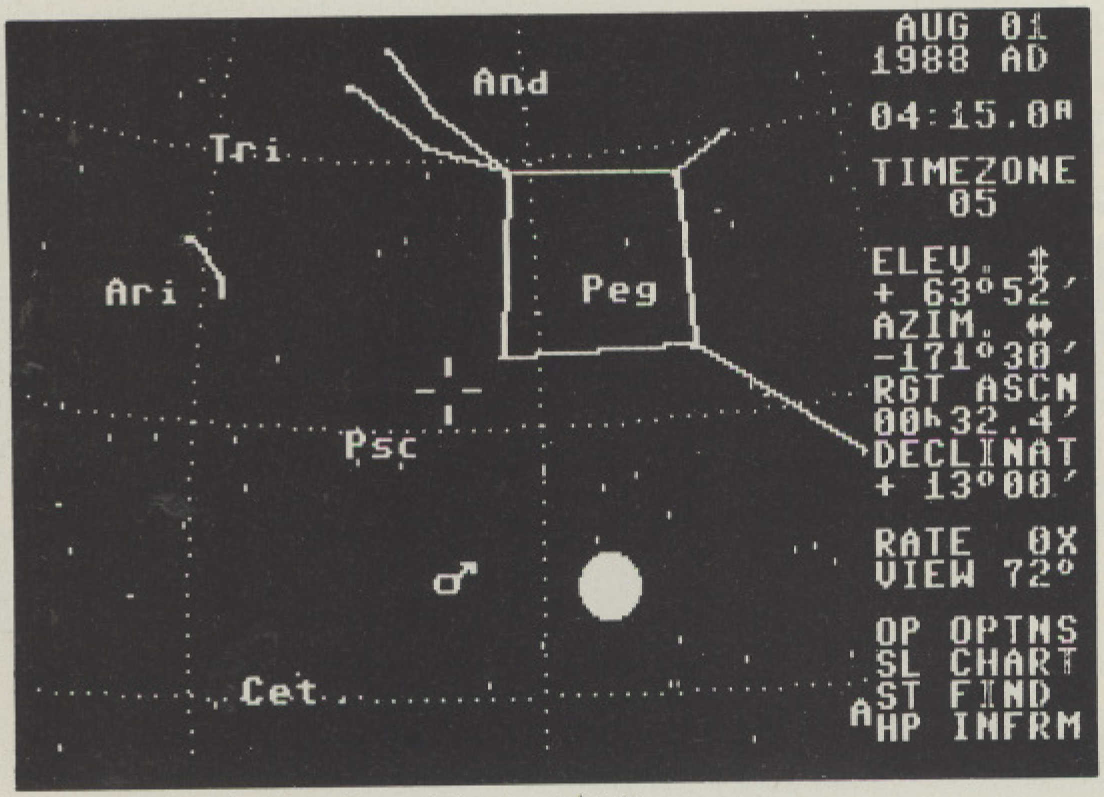
It was here I found the only error in the manual. It states that you have to press Control+P for an Epson and Shift+P for the XMM801. Don't, it's the opposite way round.

Dumps usually take around five minutes to complete and come out around A4 size.

The back of the manual houses numerous tables, future astronomical events, mathematical equations and places all over the world to experiment with. Did you know that there are 9,460,731,798,000 km in one light year? Neither did I.

The Atari Planetarium is easy to use and user-friendly. An excellent manual, plenty of on-screen prompts and a multitude of examples make traversing the universe very simple.

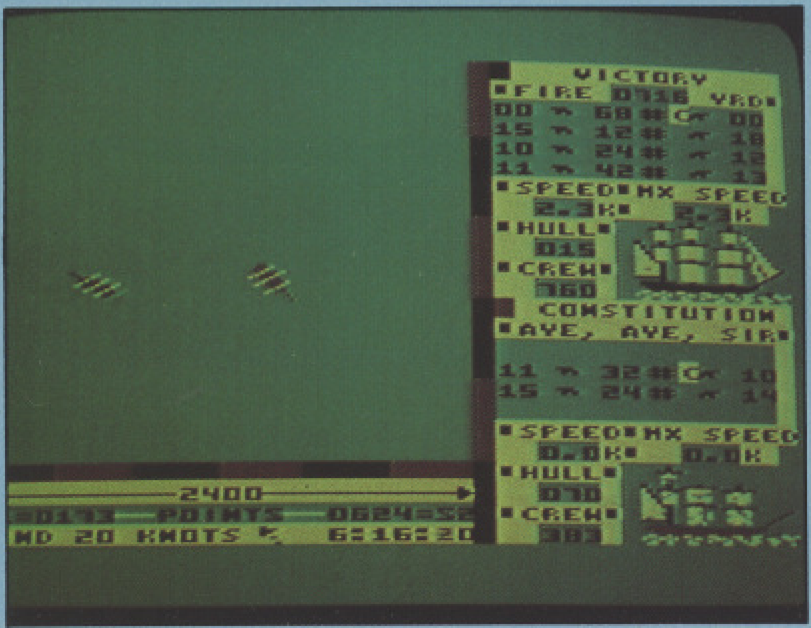
Even though £29.99 seems a hefty price tag it isn't. Programs written for the ST at the same technical level retail for nearly £80. So, if you buy one for your Atari 8 bit you'll save £50.



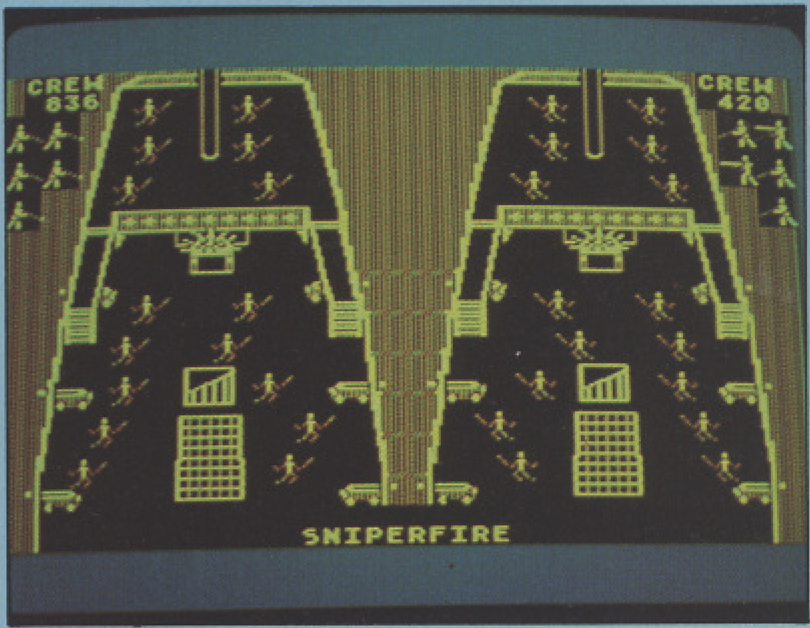
Dumps usually take about five minutes to complete

Product: The Atari Planetarium
Price: £29.99 (disc)
Supplier: Atari World, 11 Fennel Street, Manchester M4 3DU.
Tel: 061-834 4941

Fight old battles again



All naval combat is displayed in colour



You can get your snipers to cut them down

Product: Broadsides
Price: £19.99 (disc)
Supplier: SSI/US Gold, Units 2/3 Holford Way, Holford, Birmingham BS 7AX.
Tel: 021-356 3388

> *Beat to quarters! Run out the guns and clear for action!*

THESE are the commands issued by many a sea captain in the 18th century as his ship came under attack from an enemy vessel.

Now SSI gives you the opportunity to take command of some of the most famous of these ships and recreate historical sea battles of old.

Designed for two-player or solo mode, your vessels must be rigged, manned and armed just like the real thing. And they handle in the wind exactly the same as you would expect from one of the great wooden warships of years ago.

Due to its size and complexity Broadsides is disc only. Loading is straightforward. Remove all cartridges from older Atari micros, or hold down the Option key on newer models. Then switch on, remembering to place your disc in drive one.

After the loading sequence – which is accompanied by a superb high-resolution picture of a warship – the options screen is displayed.

You can choose whether you want to use a joystick or the keyboard, the skill level of the gameplay or whether you want to play an arcade or tactical simulation.

The first offers a faster and more exciting game with fewer decisions to make. Those preferring a more thoughtful version should opt for tactical. This allows you much more control over the procedings – but it can get complicated.

There is also the choice of a naval battle or a reconstruction of a boarding foray. I found this a very useful option when I found myself tiring of watching ships float around the screen.

A number of famous ships have been faithfully recreated and saved on to your data disc, but if you tire of them you can always create your own. I recommend you read the player's manual fully before attempting to do so – it can get little involved.

All naval combat is displayed on a colour, high-resolution graphics screen which depicts speeded up sequences of the action.

A clever feature of this display is that when your ships get closer together, the on-screen size increases proportionately, giving a very realistic feel to the proceedings.

When you opt to board another vessel another animated graphics sequence is used. In this you can make your men charge your enemies or you can get your sharp shooters to cut them down with a hail of gunfire.

Sound is put to good use throughout the game and a sea shanty is played at the end of a session.

Whenever an encounter is won the national anthem of the country concerned is played – slightly out of tune.

Luckily SSI has done its usual best within the documentation and included a number of easy look up tables. At a quick glance you can get a rough idea as to which commands and keys do what. Very useful.

The player's manual is a mine of information and is produced with the usual classy style we have all grown to expect from the master of strategy games on the Atari micros.

Overall Broadsides is one of the best simulations from SSI and is a pleasure to play.

Helen Arden

Sound	*5*
Graphics	*5*
Documentation	*8*
Complexity	*6*
Value for money	*6*
Overall	*6*

Battleground Europe

Product: Mech Brigade
Price: £19.99 (disc)
Supplier: SSI/US Gold, Units 2/3 Holford Way, Holford, Birmingham BS 7AX.
Tel: 021-356 3388

SSI has come up with yet another warfare simulation. This time you have an opportunity of controlling some of the most powerful modern military hardware ever built.

The scenario for the combat is a hypothetical war between the Nato forces and the Soviet Union.

As with all SSI games, you are greeted with a menu screen from which you must enter a number of variables that affect the coming battle.

Available only on disc, the game can be loaded by removing all cartridges from old Atari micros, or holding down the Option key and switching on with your game disc in drive one.

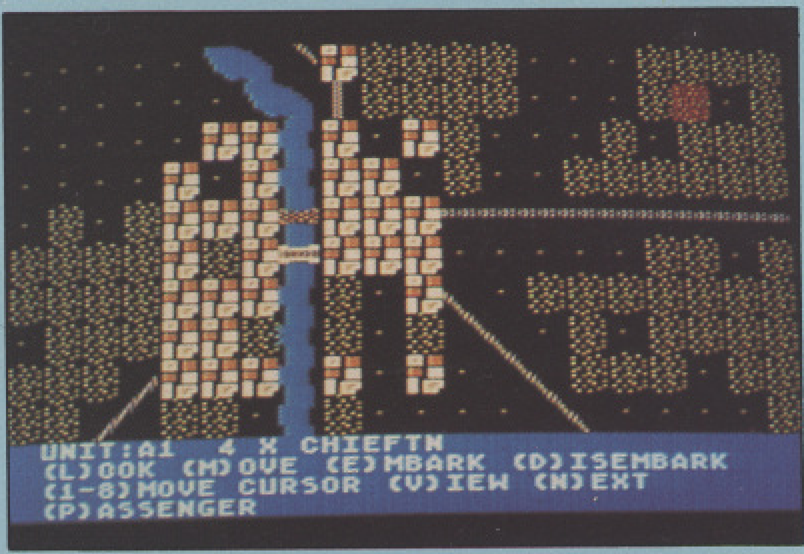
Once loaded you choose your options and away you go. I found it great fun to let the computer randomly generate its own map, as this adds a dimension of the unknown.

Your commands to the squadrons of vehicles are entered via a status window at the bottom of the screen. The action is split into several phases. However, you will have to read the manual carefully before you can understand their operation fully.

The full colour map display used is composed of a 60 by 40 grid, of which 20 by 10 squares may be viewed at one time. By pressing keys 1 to 8 you can move your cursor around the map. If the cursor is moved off the edge of the display the map will scroll to reveal the hidden portions.

When you play an assault type battle – selected from the options menu – the map is reduced in size to a 60 by 20 grid.

You are provided with a quick reference chart to help you identify the terrain and units on the map. I found it useful to place sticky backed plastic around it to stop it getting dog-earred after constant use.



In the middle of the booklet is a section detailing interesting facts about a number of armoured vehicles from both sides.

Not only can you control all the ground vehicles but helicopters and infantry can also be deployed.

Basically you have every form of weapon of destruction at your fingertips. Several historical scenarios are included on your main disc and it is very interesting to play.

Overall an excellent simulation from the experts in wargames on the Atari.

Dave Manning

Sound	*N/A*
Graphics	*5*
Documentation	*7*
Playability	*7*
Value for money	*6*
Overall	*6*

Call for double vision

Product: Tanium
Price: £1.99 (tape)
Supplier: Atari World, 15 Fennel Street, Manchester.
Tel: 061-834 4941

IT has been six years since you took on the alien armada single-handedly in an attempt to save the universe. You managed to destroy their asteroid bases and turned the motherships into expanding clouds of vapour.

You stole certain valuable pieces of hardware for your trusty old ship and retired to the planet Sloar – which is inhabited by small furry animals – to spend your last few years playing sport simulations and arcade games.

But you have become restless and yearn for the thrill of battle against incredible odds – you must be stupid. But guess what? – the Intergalactice Federation needs your help in saving the universe – again!

The enemy – unspecified by the cassette inlay – has captured the second most strategically important planet this side of the Sanvolgrani Rift.

You have to fly your super-sleek Quariad class stealth fighter over the surface of the planet and destroy as many of the enemy ships as you can.

Not a very original storyline perhaps, but the actual game has had a little more thought put into it.

The action takes place on two screens which show plan and side-on views of your ship simultaneously. By watching both screens and controlling the ship that appears in each, you negotiate a tricky route through all the levels.

All movement is executed via the joystick plugged into port one. Controlling both ships takes some getting used to because up and down move one while left and right move the other.

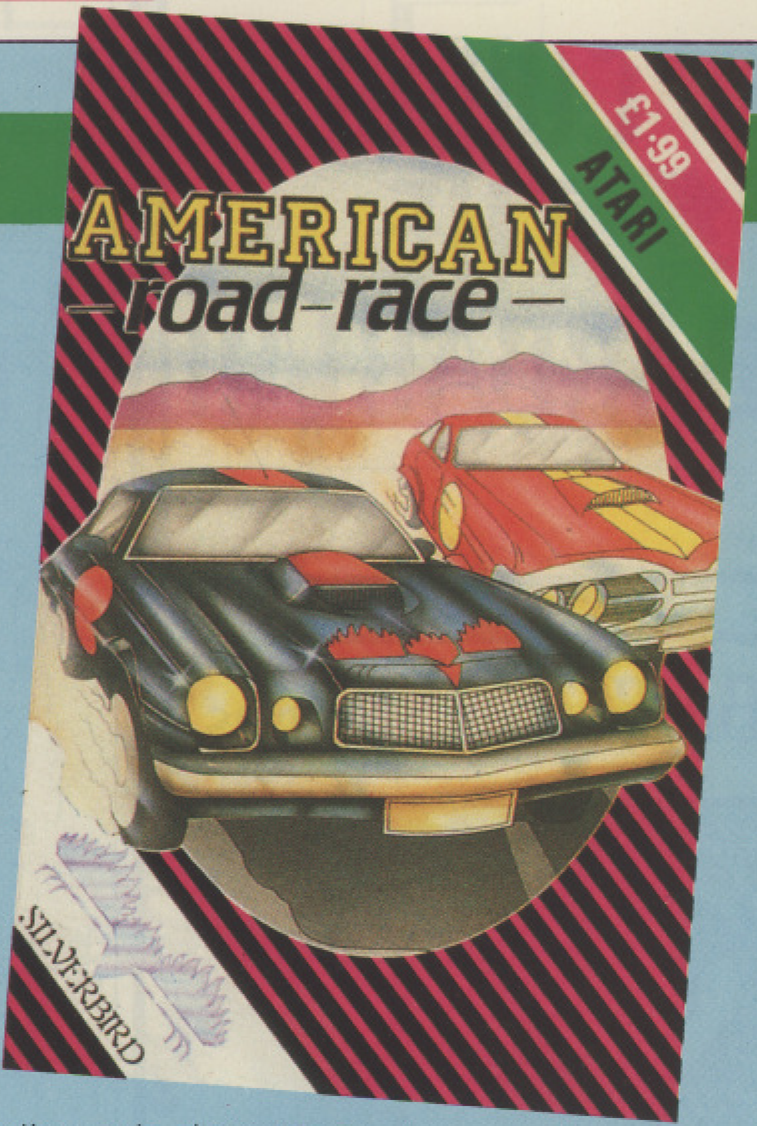
Two excellent pieces of music have been written for the game and the sound effects are of a high standard.

The game is very playable and great fun. The perspective caused me some confusion at times and there were several occasions when I wasn't sure which collision wiped me out.

John Butters

Sound	*7*
Graphics	*7*
Playability	*6*
Value for money	*7*
Overall	*7*

Burning rubber



Product: American Road Race
Price: £1.99 (tape)
Supplier: Atari World, 15 Fennel Street, Manchester.
Tel: 061-834 4941

OVER the last few months several classic games have been re-released as budget titles. Now from Firebird comes American Road Race, formally an Activision full-price car game which I believe was originally called The Great American Cross Country Road Race.

You drive a very fast sports car across North America in one of four races – which you select when the game loads.

On offer are Los Angeles to New York, Seattle to Miami, San Francisco to Washington or the US tour. In the latter you race through every city marked on the map.

Once the route has been selected the map screen will appear and you have to check road and weather conditions and set your time of departure.

Watch out for police speed traps, night driving, bad weather, collisions with other drivers and a multitude of other obstacles placed in your path. My major problem was over-revving the engine and blowing it up.

The joystick controls take a little getting used to. By pressing the fire button and moving the joystick several variations on movement and changing gear come into play.

You must also make sure you refuel your car at regular intervals. Gas pumps appear every 100 miles, and all you have to do is stop next to one and wait.

If you run out of fuel don't worry too much. A gas pump will appear sooner than the normal 100 miles.

The gameplay is all right, but I wouldn't class it as one of the most addictive games I have ever played. The car's movement reminded me of a game I bought several years ago called Baja Buggies – which was adequate but not brilliant.

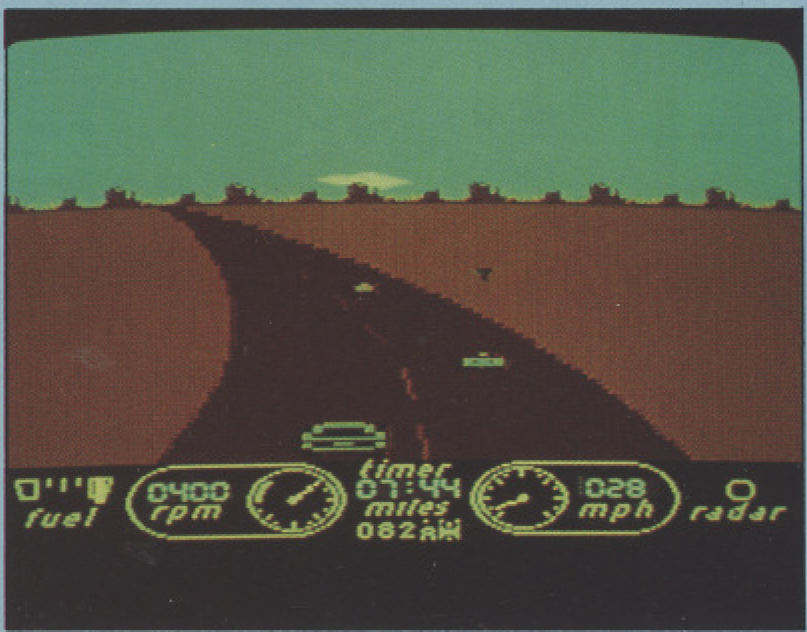
Sound effects are not stimulating, but again I can't really criticise them because a car engine can only really sound like a car engine. The police car's siren was a monotonous drone that got on my nerves very quickly.

The feature I liked the most appeared with the credits. A car zooms on from the left of the screen creating a massive dust cloud which clears to reveal another set of credits.

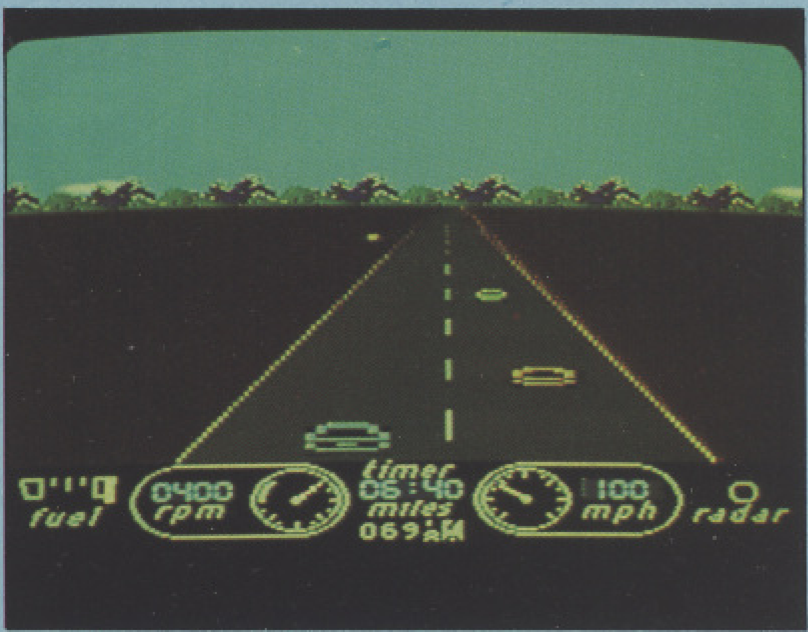
As a budget game, Road Race offers excellent value for money if you are new to Atari computers and don't already own a number of car racing games.

Pam Williams

Sound	*5*
Graphics	*6*
Playability	*5*
Value for money	*6*
Overall	*6*



Slow down for the curves...

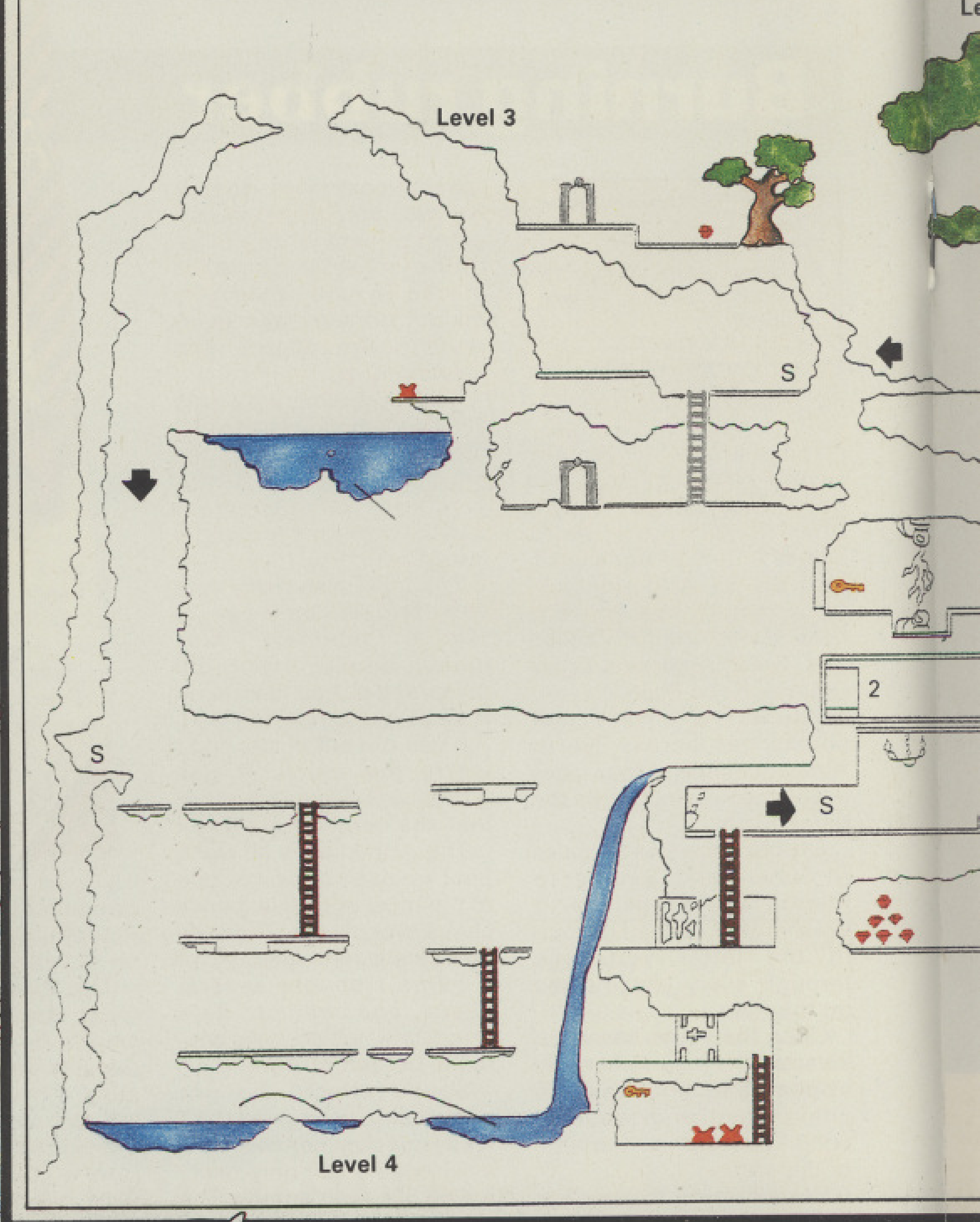


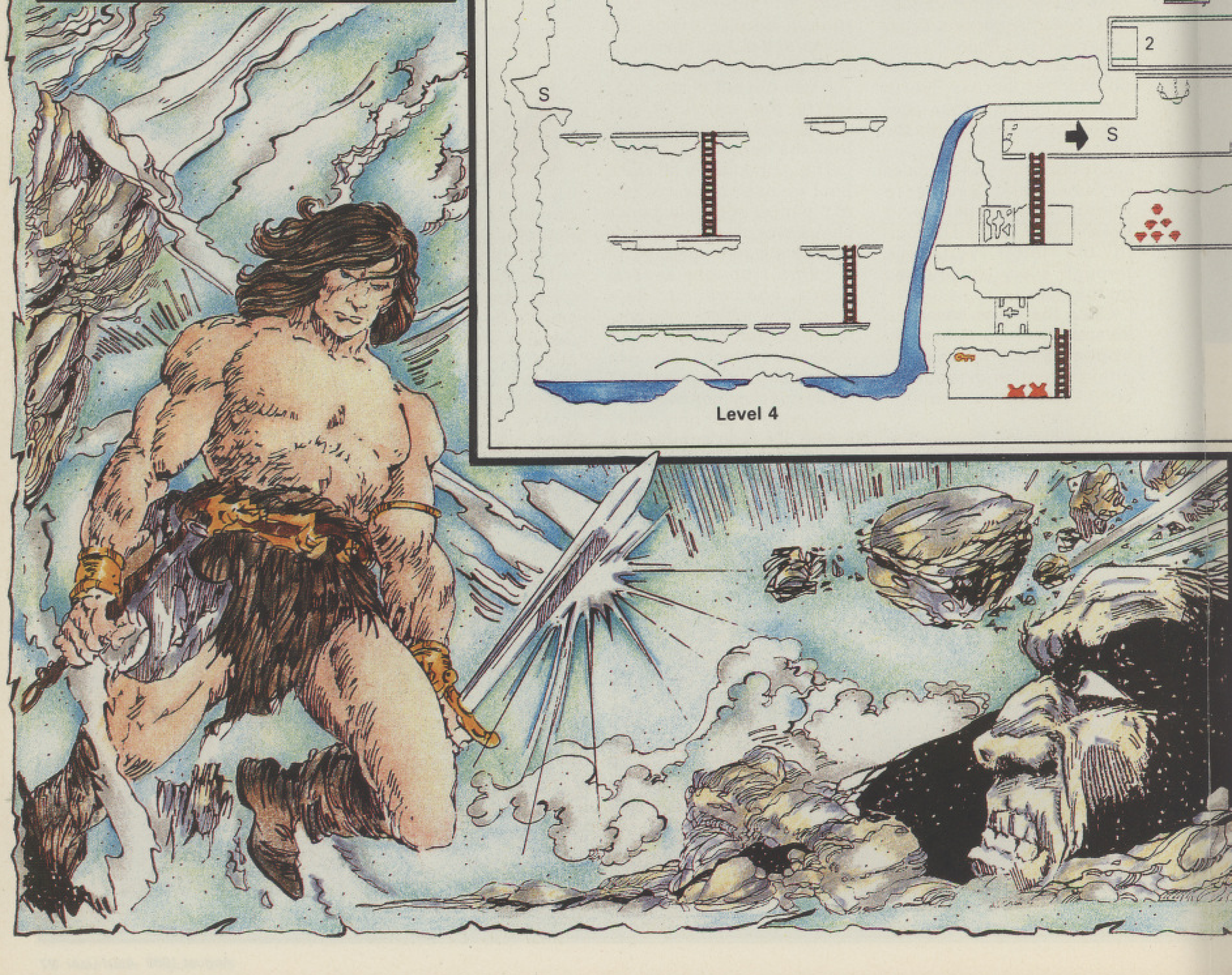
...speed up on the straight

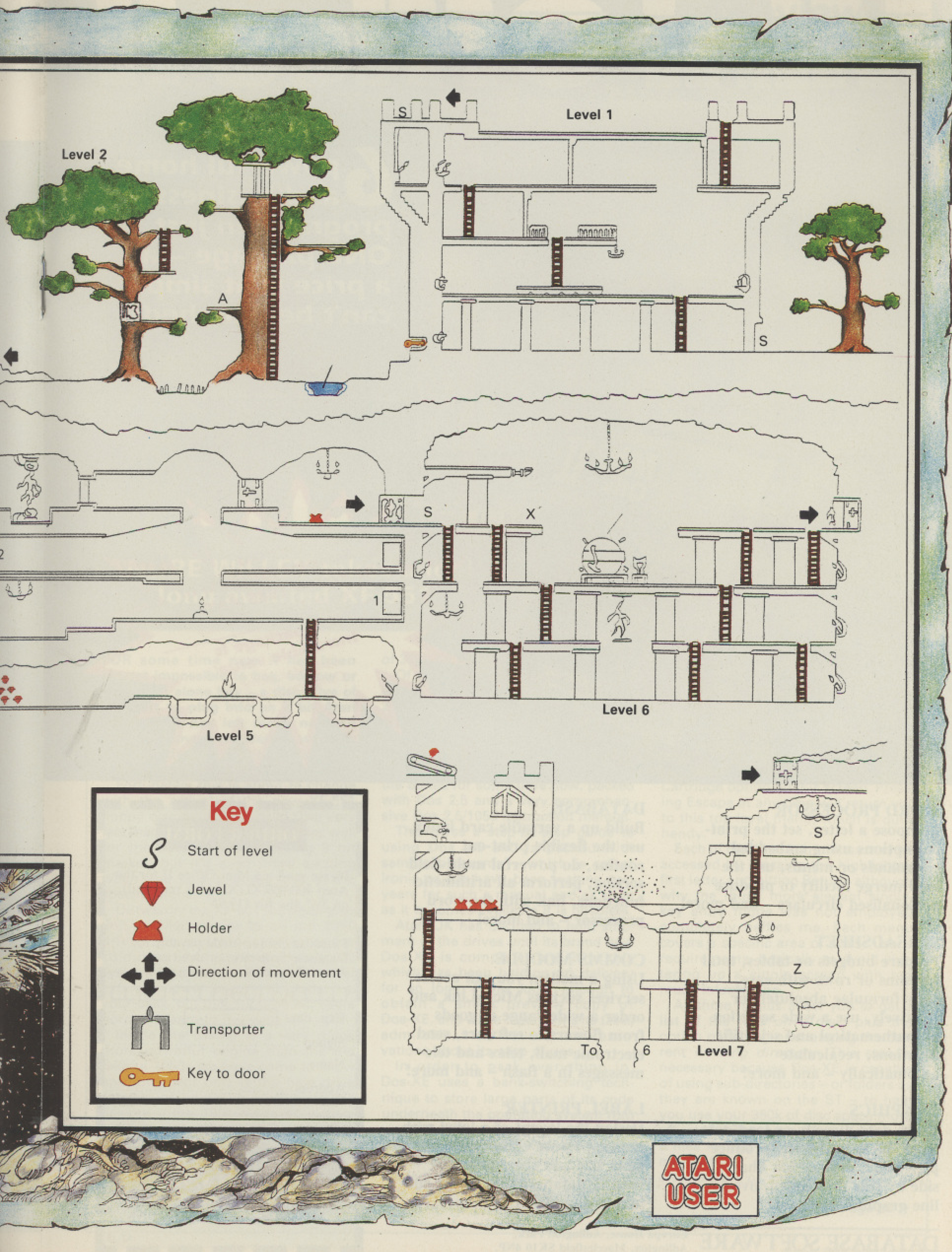
CONAN THE BARBARIAN

By Bryan Stevens

See also Hints and Tips on Page 45 for further information and solution







Level 2
A
Level 1
S
S
S
X
1
Level 5
Level 6
Key
Start of level
Jewel
Holder
Direction of movement
Transporter
Key to door
S
Y
Z
To 6
Level 7

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ATU8



Driven to madness...

ANDRÉ WILLEY takes a look at the long awaited XF-551 disc drive

FOR some time now it has been almost impossible to beg, borrow or steal – let alone buy – a disc drive of any sort to plug into an 8 bit Atari micro. This has left many new XE system owners wondering whether they made the right decision in buying Atari.

Fortunately this is about to change with the arrival of the new XF-551 floppy disc drive from Atari. The very fact that it is available at all bodes well for the survival of a thriving 8 bit market, but it's even more exciting when you take a closer look at the specifications.

Outwardly the XF-551 is a sleek grey unit, similar in size to an old 1050 drive, but matching perfectly the colouring and styling of the XE system. As always there is yet another external power supply to clutter up your desk, but that's a problem users normally learn to live with.

Inside the casing is a very much more powerful engine than the old faithful 1050s we have come to know and love. Not only is the new drive capable of operating in true double density – the 180k mode previously available only with a US Doubler chip installed – but there is also a completely new format available: Double sided, double density. This new mode automatically gives 180k on each side of a floppy, a grand total of 360k on each 5.25in disc.

Of course there's always a catch – and in this case it's that good old Dos 2.5 wasn't designed to be able to access more than 130k of data, so you'll have to switch to a new Dos to get the most from the drive. Despite this, XF-551s have been shipping in the States for some time now, packed with Dos 2.5 and a very comprehensive Dos 2.5/1050 instruction manual.

This gives a step-by-step guide to using Dos 2.5 and is packed with sample programs – which is rather ironic as we have been waiting two years for such a manual and as soon as it becomes available it is obsolete.

Atari UK has decided to hold shipment of the drives until its brand new Dos-XE is complete, and it is this which has been holding up delivery for so long. I was lucky enough to obtain a sneak preview copy of Dos-XE, and while it performs its tasks admirably, I do have a few reservations about its ease of use.

In order to pack everything in, Dos-XE uses a bank-switching technique to store large parts of its code underneath the operating system rom – which unfortunately means that it won't work with old 400 or 800 micros.

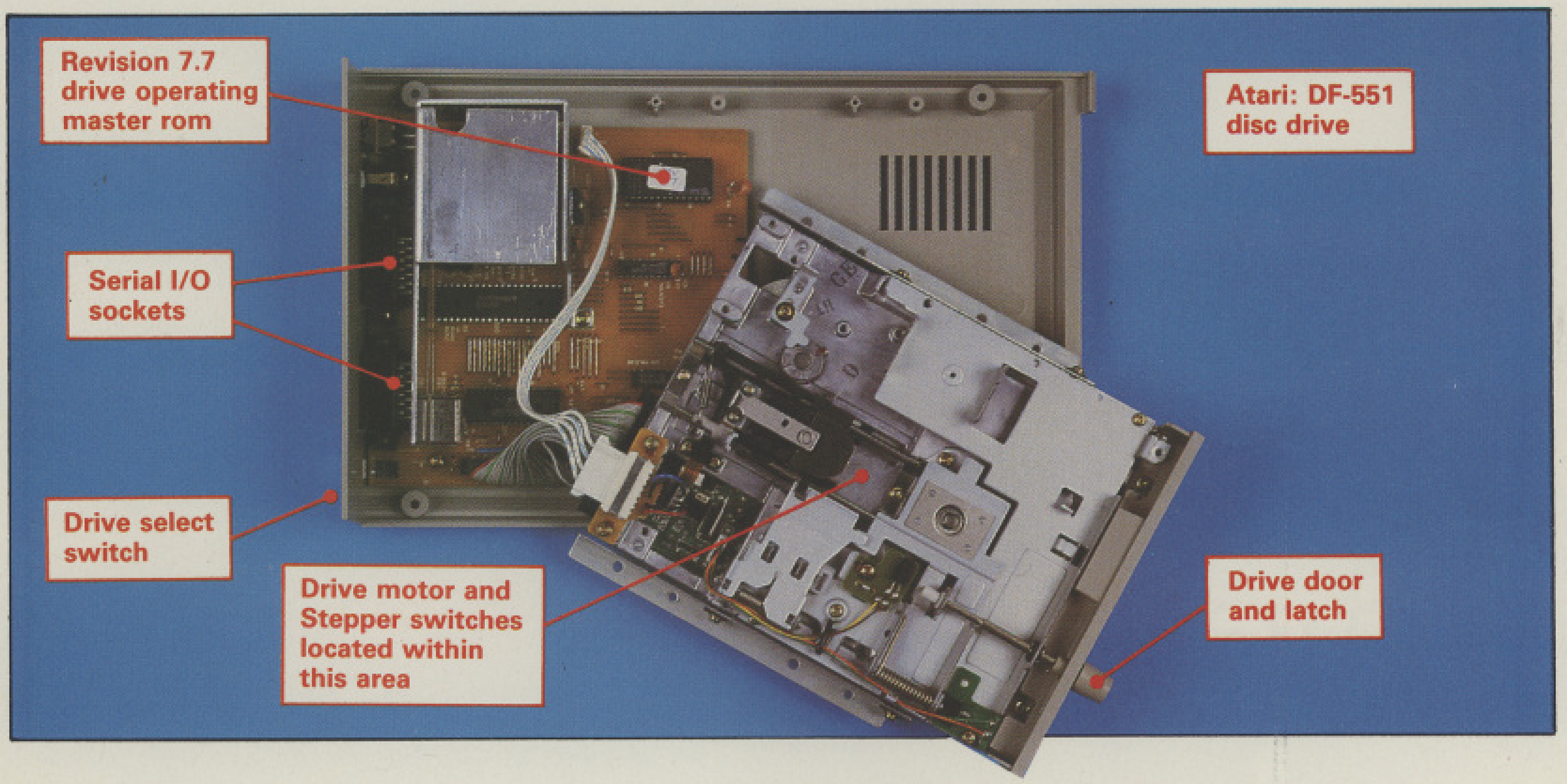
The advantage is that, once it's loaded, you won't need to re-insert the Dos master disc because everything you'll need is already waiting in memory. When you load up Dos-XE without Basic you are greeted with three menu options: File access, Machine language access or System function.

If you have come from Basic – or some other language cartridge – you will also see an Exit to Basic or Exit to Cartridge option on this screen. Pressing Escape at any time will return you to this top level menu, which is quite handy.

Each of the three sub-menus may be accessed by pressing the highlighted first letter and hitting Return, although why the much more elegant single-key entry mode was not employed completely baffles me. Each menu covers a specific area of a disc user's requirements, basically to avoid cluttering up a single screen with too much information.

All three menus allow you to get a list of the files on a disc, plus the option of setting or changing the current *working directory*. This step is necessary because Dos-XE is capable of using sub-directories – or folders as they are known on the ST – to help you use your 360k of disc space more efficiently. These are single entries on a files listing, but may contain many more files or even other sub-directories. For example, the way of

Turn to Page 32 ▶



◀ *From Page 31*

saying that the program BOXES.BAS is stored inside the sub-directory called MYPROGS on drive one would be to use the path:

```
D1>MYPROGS>BOXES.BAS
```

In fact, Dos-XE is quite flexible in its use of directories, and you could use D1:>MYPROGS or D1>MYPROPGS or even just :>MYPROGS.

If you had already selected the current working directory as D1>MYPROGS then all you need to type to access the file would be its name, BOXES.BAS.

The three menus are laid out as shown in Figures I, II and III and provide every feature that was available on Dos 2.5 – plus quite a few extras. Probably the most notable is the facility to initialise the disc in any one of four formats: 810 mode, 1050 mode, XF-551 mode or single sided/double density (SSDD), giving 90k, 130k, 360k and 180k respectively on each disc.

Dos 2.0 or 2.5 discs may be used if you first select the Allow Dos 2.x Access option for a given drive. Then you may use A:filename to refer to this disc. I'd have preferred it to be automatic as with SpartaDos, but it's certainly better than nothing. It is only possible to use one disc at a time in Dos 2 mode – preventing you from copying between two Dos 2.5 discs, for example.

While it's impractical to go into all the extra menu items, the most interesting are the availability of date stamping on files, the Display and Change memory options on the Machine language menu and the facility to run batch files.

Batch files allow you to execute a number of menu commands which you have previously stored in a file and they are a powerful way to automate often repeated tasks. There is a batch facility available from the menu system too, which enables you to enter the various commands and parameters on one line without waiting for all the prompts to appear.

For example, to access the files menu and send a directory of drive two to the printer you could type:

```
FILES_MENU  FILES_LISTING  D2:*.*  P:
```

or even abbreviate the command to:

```
F  F  D2:  P:
```

Unfortunately this technique is hampered by the time-wasting necessity of watching all the interim menus re-drawing themselves painfully slowly before the command can execute. Perhaps the final version will allow batch commands to go straight to the relevant item without displaying the menus.

On the whole a quite passable Dos, but not without its faults. Weighted against the advantages of better menus, sub-directories and the extra density modes are the facts that the menu system is too slow and laborious. Also too much emphasis is made of the Start, Select and Option keys – leaving cluttered, confusing and messy screens. Why not use a simple and far more meaningful Yes or No system rather than *Push Start to Continue, Push Select to stop now* which serves only to confuse both new and existing users?

Overall the XF-551 drive itself performs very well indeed – significantly faster than a 1050 in many cases – and is generally pretty quiet in operation. I

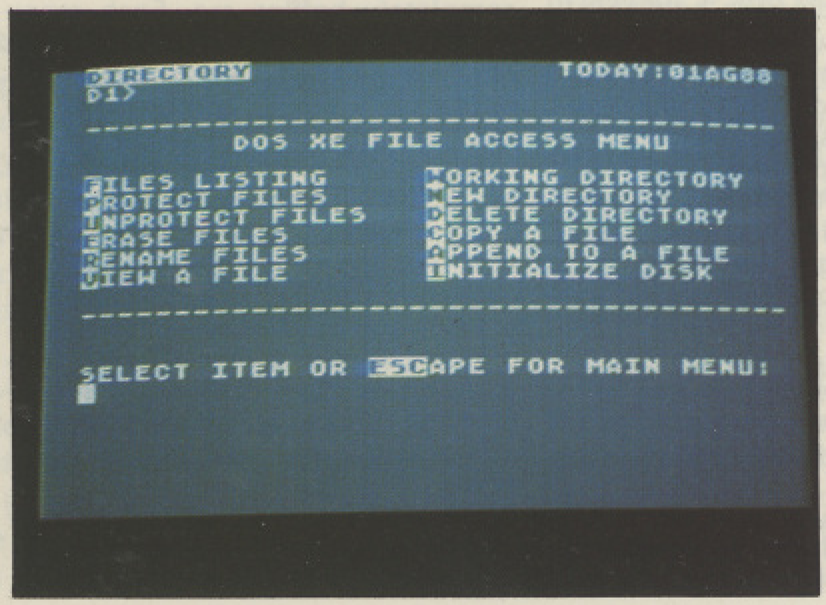


Figure I: File access menu

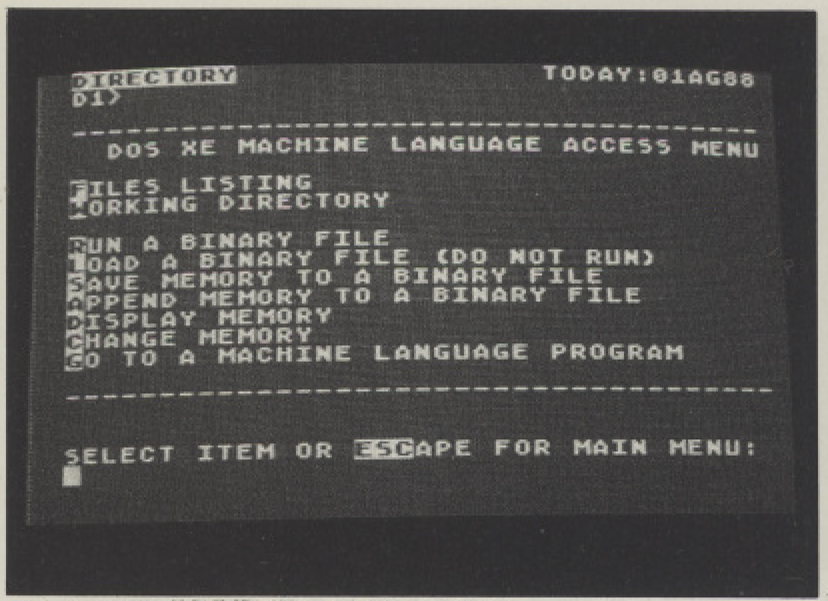


Figure II: Machine language access menu

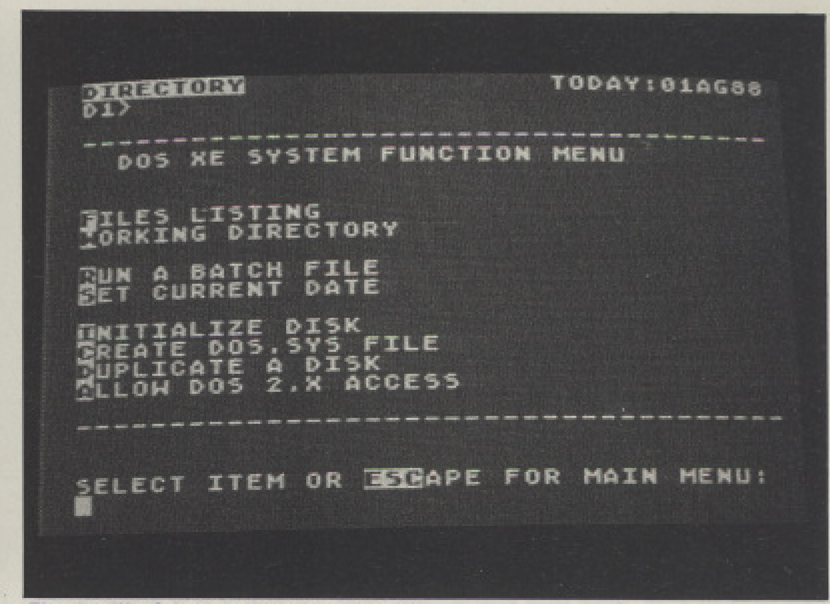


Figure III: System function menu

suppose it would have been nice to have a power light as well as a busy light, but otherwise I've no complaints other than a slightly excessive price tag.

As far as Dos-XE goes, however, my own preference is still for ICD's excellent and far superior SpartaDos, already quite capable of working in all four densities. Its support of Dos 2.x discs is automatic – just put one into the drive and SpartaDos will recognise and handle it accordingly.

Also I much prefer using a command processor to Dos-XE's rather peculiar batch-processing menu system – but of course SpartaDos does have a very powerful menu too, so the choice is always there if you happen to prefer menus.

● *Let's hope that the final release of Dos-XE might clear up some of these minor problems and leave us with a new standard for file storage to go with an excellent new drive. Until then, my advice to those considering moving up from cassette is to go out and buy an XF-551 at once – but you might find that you prefer to use it with SpartaDos.*

Density	Total Bytes	XF-551 time	1050 time
Single density	32,768	28.5	30.9
Enhanced density	32,768	28.5	31.2
Double sided	65,536	45.6	n/a

256 sectors of data transfer (read or write)

Disc density	Dos 2.5 XF-551	SpartaDos XF-551	Dos-XE XF-551	Dos-XE 1050
Single	27.2	25.7	27.1	24.5
Enchanced density	27.4	25.8	27.3	25.5
Double density	n/a	26.3	27.0	25.1
Double sided	n/a	49.8	50.3	n/a

Format timings (seconds)

Density of boot disc	Dos 2.5 XF-551 (130XE)	SpartaDos XF-551	Dos-XE XF-551	Dos-XE 1050
Single/enhanced	16.6	17.9	25.3	27.5
Double/double sided	n/a	16.3	22.3	23.0

Boot-up times (seconds)

Notes: The beta test version of Dos-XE which I tested doesn't seem to bank-switch correctly, and because of this it resides entirely in normal ram. This gives it a free memory of only 19,094 bytes from Basic (as opposed to 32,274 bytes with Dos 2.5 and 32,501 bytes with SpartaDos). No doubt this will be corrected for the final release.

Also there was no indication of how to switch off the Dos-XE disc verify mode, so any operations which include a sector write from Dos-XE (marked with an asterisk) will show up as being far slower than normal. This again should be cured on the final release, but take a look at the direct sector access times for a better indication of the true drive speed.

Drive type/Density	Dos 2.5	SpartaDos	Dos-XE
1050 Single density	22.5	22.5	74.9 *
XF-551 Single density	19.9	20.4	73.0 *
XF-551 Double density	n/a	17.3	48.4 *
XF-551 Double sided	n/a	17.3	42.6 *

Drive timings: Open file, write 20,000 bytes, close file

Drive type/Density	Dos 2.5	SpartaDos	Dos-XE
1050 Single density	20.3	20.0	21.0
XF-551 Single density	18.6	18.0	19.3
XF-551 Double density	n/a	15.2	16.2
XF-551 Double sided	n/a	15.2	10.4

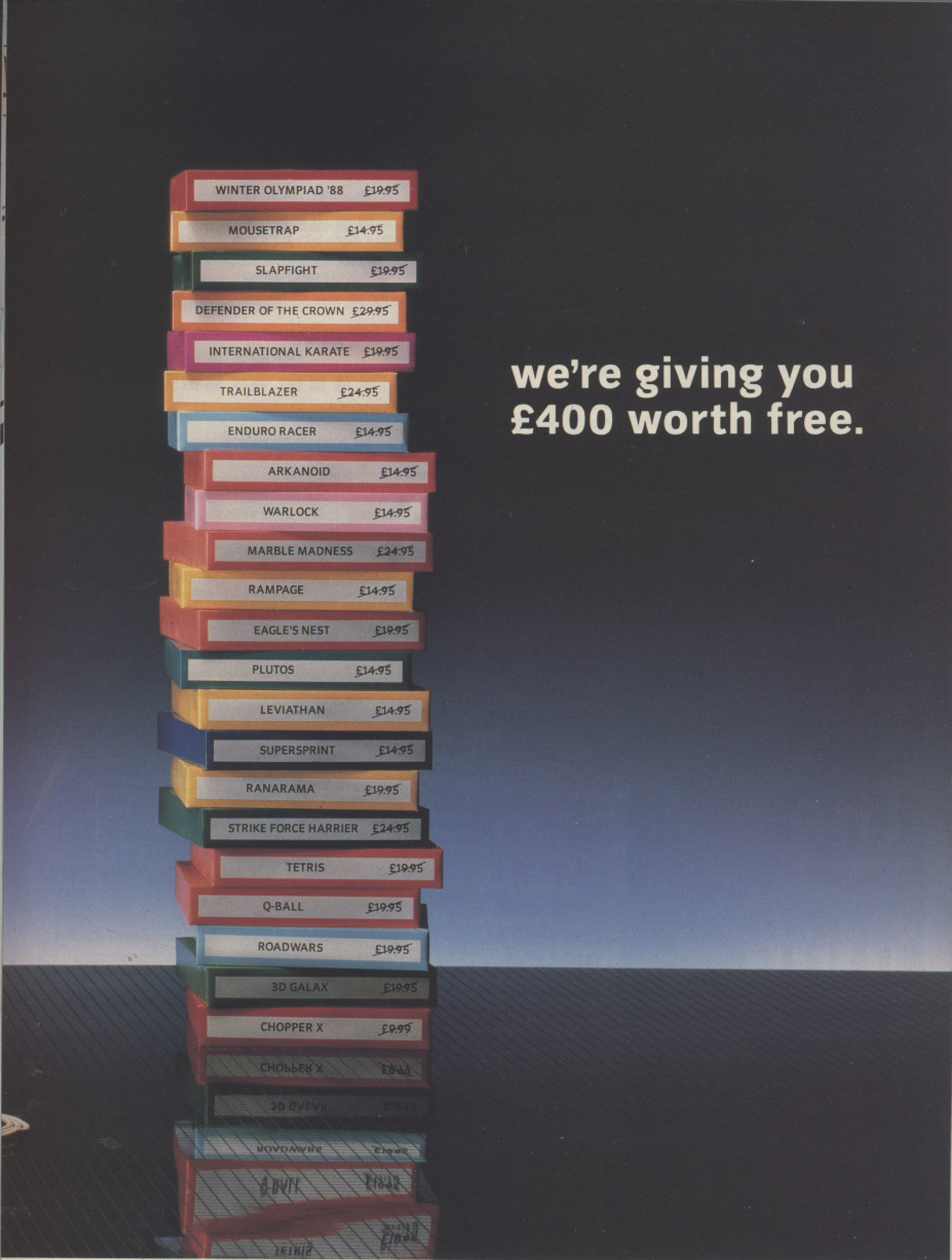
Drive timings: Open file, read 20,000 bytes, close file

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How to Join: See Page 6

Problem the size of a planet...

by Rouloc



TIME once again to free last month's captured Orcs – they do whinge on so if they don't get fed seven times a day on the dot – put aside the trusty broadsword and battle-scarred shield, turn up the wick on the old brass lamp and get down to relaxing with some of your recent correspondence.

Jon Ward is having problems with Hitch-Hiker's Guide to the Galaxy. He rates it as his favourite adventure in his personal top ten although as he hasn't got very far, I wonder if he will still hold to that view when he's finished. I guess he will, since HHGG gets better and better and in my opinion also, is one of the best adventures ever.

Having spent ages working out how to get past the the bulldozer without being hit on the head by a brick, Jon reached the pub. Then after drinking three pints of beer he arrived at the point where the Vogon ships come to destroy the planet. Ford dropped a device at his feet but having pressed the green button – the correct action – Jon is now stranded in the dark room.

He can't see, hear, or feel anything and wants to know what on Earth – or, because Earth has been destroyed, what in space – to do next.

Well Jon, a lot of adventurers have been caught by this one. What you

HINTS AND TIPS

Ultima IV

● *To get a ship into Lock Lake sail into a whirlpool.*

● *The Rune of Compassion lies at the end of a passage in Britannia.*

● *The Rune of Spirituality is in the hidden Treasure Chamber in Britannia Castle, under a chest. To locate the chamber, peer at a gem. When you have found the site of the chamber, walk straight into the wall which will then give way.*

● *The Gate Spell requires ash, pearl and mandrake.*

● *The secret entrance to Hythloth is at the back of Britania Castle.*

● *You will need the balloon to get the white stone on top of the Serpent's Spine ridge.*

● *The eighth member of the party is a shepherdess called Katrina living in Magincia. When standing outside the town, do not cross the bridge but go south to find her.*

List of Mantras

Honesty – AMH
Compassion – MU
Sacrifice – CAH
Justice – BEH
Humility – LUM
Valor – RA
Spirituality – OM
Honor – SUMM

Guild of Thieves

● *Go to the hot house to get rid of the snake.*

● *Use the skeleton's finger to open the sarcophagus.*

● *To get the gem from the wax, hold the mirror in the beam and reflect it on to the wax. Then catch the gem as it falls.*

● *To use the cauldron, put the eye, skin, heart, berries and cube in it and open the sachet.*

● *To get down the thin shaft, dig in the sand to find the boots. Then wear them and make sure you've got a lamp.*

● *How do you get the honey from the beehive? It's impossible.*

● *To deal with the spider, open the jam jar in the stable to attract some flies.*

Close the jar and later throw jam at the spider.

◀ *From Page 37*

should do when you first reach the dark room is read the description very, carefully. Type WAIT a few times, and you will notice a subtle difference in the text – suddenly one of your senses is not mentioned.

So in this particular instance try typing SMELL THE DARK after the text has changed. The same principle applies whenever you again find yourself in this dark room as you surely will – just watch for changes in text.

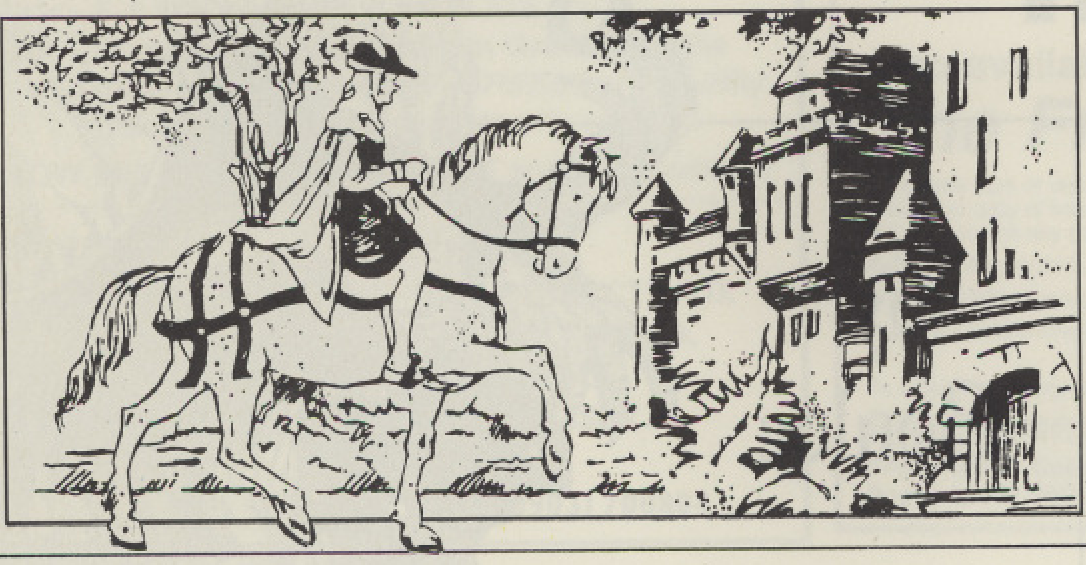
Christopher Beard of Newthorpe, Notts, wonders if Infocom has finished with the 8 bit Atari as no new adventures from that company have appeared for a while. Well, I'm afraid it does begin to look a bit that way, Christopher – none of the latest Infocom adventures have been converted for the Atari 8 bit format, as far as I know. If they have, Infocom is keeping awfully quiet about it.

But all is not gloom and doom – three rousing cheers for Rainbird, which has picked up the mantle and has not forgotten we Atari adventurers. Rainbird has followed up the excellent Guild of Thieves with the even funnier Jinxter, one of the best you'll see on your machine. It's out on disc now. Make sure you don't miss it or you'll kick yourself.

My thanks to C.H. Seymour of Liverpool and B.H. Standing of Port Talbot who have supplied much help with Ultima. Well done, faithful adventurers.

I shall put your guidance to good use, starting with this issue. In addition, I hope the tips on Guild of Thieves let many of you who have requested them make further progress with this superb adventure.

Until next month, have fun.



JON WARD'S RAVES

1. Hitch-Hiker's Guide to the Galaxy
2. Stationfall
3. The Pay Off
4. Jinxter
5. Lurking Horror
6. Red Moon
7. The Pawn
8. Worm in Paradise
9. Lords of Time
10. Guild of Thieves

Car Crazy



Experience the thrill of racing with STEPHEN WILLIAMSON's exciting simulation

ONE of the most popular games on the Atari was Pole Position, a car game which uses a head on view. In it you take the role of a formula one racing driver as he winds his way around several tracks.

Many years later a game called Super Sprint came out – on the ST – which uses an overhead perspective for the main game play. Unfortunately, it was never released for the 8 bit – the closest we ever got was Grand Prix Simulator.

Now we give you the chance to experience the exhilarating thrill of driving a car round a track at high speed. The game can be played by two players against each other or by one player racing against the clock.

Make sure that you check your typing using Get it Right! and save a copy before running it. A mistake in the data statements may result in a system crash, and you could lose hours of typing.

Once you're sure that the game has been entered correctly you can run it. After it has initialised – which takes around a minute – you are presented with several game options. These range from one or two player game, length of the race (4 to 24 laps) and difficulty of play (1 to 5) – use the Option and Select keys to choose them.

If you are in the two player mode car one is pink and the other white. One player mode uses a joystick plugged into port one.

By altering the level of difficulty you increase the number of obstacles you have to avoid. To make life more difficult the centre of the track is marshland which has a nasty tendency to trap your car. It is possible to extricate yourself but you will lose valuable time doing so.

Your car has four controls: Fire button to accelerate, pull back to brake, push left or right to steer.

Your cars are indestructible and bounce of each other, the obstacles and the side of the track. But remember that a bounce will cause your car to travel and steer in the opposite direction

A status line at the bottom of the screen displays the race statistics – lap number, time of last lap and the average lap time so far. At the far right hand side is the time taken – all times are shown in seconds.

On the left of the screen is a lap marker and you must travel in a clockwise direction to complete a lap – anticlockwise trips will be ignored.

If you want to abandon the game at any point, press Option to return to the main menu.

```
10 REM CAR CRAZY
20 REM BY STEPHEN WILLIAMSON
30 REM INITIALISE
40 DIM AV1$(10),AV2$(10)
50 GRAPHICS 1:POKE 712,6:POKE 708,186
60 POKE 709,24:POKE 710,26:POKE 711,17
0:POKE 752,1:FLAG=0
70 ? "CAR CRAZY by Stephen Williamson"
80 ? "INITIALISING... PLEASE WAIT"
90 DIM CL1$(20),CL2$(20)
100 GOSUB 2760:GOSUB 2810
110 POKE 756,136:GOSUB 1210:RESTORE 21
20
120 FOR I=0 TO 729:READ A:POKE 30000+I
,A:NEXT I
130 PMBASE=36864:PL0=PMBASE+1024
140 PL1=PMBASE+1280:PL2=PMBASE+1536:PL
3=PMBASE+1792
150 RESTORE 2490:FOR I=0 TO 383:READ A
:POKE PMBASE+I,A:NEXT I
160 RESTORE 180:FOR I=0 TO 9:READ A:PO
KE 29000+I,A:NEXT I
170 POKE 29020,76:POKE 29021,95:POKE 2
9022,228
180 DATA 104,169,6,160,92,162,113,76,9
2,228
190 HP0=1700:HP1=1701:HP2=1702:HP3=170
3
200 VP0=1705:VP1=1706:VP2=1707:VP3=170
8
210 COLL0=53252:COLL1=53253:COLL2=5325
4:COLL3=53255
220 PCOLL0=53260:PCOLL1=53261:PCOLL2=5
3262:PCOLL3=53263
230 SPEED1=1711:SPEED2=1714
240 DIRECTION1=1710:DIRECTION2=1713
250 POKE 54279,144:POKE 53277,3:POKE 6
23,1
```

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```
260 POKE 559,62
270 RESTORE 2730
280 FOR I=1 TO 15:READ A:CL1$(I,I)=CHR
$(A):NEXT I
290 FOR I=1 TO 15:READ A:CL2$(I,I)=CHR
$(A):NEXT I
300 N=1
310 POKE HP0,0:POKE HP1,0:POKE VP0,0:P
OKE VP1,0:POKE HP2,0:POKE HP3,0
320 POKE VP2,0:POKE VP3,0:SOUND 0,0,0,
0:SOUND 1,0,0,0:SOUND 2,0,0,0:SOUND 3,
0,0,0
330 A=USR(ADR(CL1$)):A=USR(ADR(CL2$))
340 POKE DIRECTION1,0:POKE DIRECTION2.
0
350 AV1$="0.00":AV2$="0.00":POKE SPEED
1,10:POKE SPEED2,10
360 ? CHR$(125):? "NO. OF PLAYERS ":N
370 ? "PRESS SELECT TO CHANGE"
380 ? "PRESS START TO CONTINUE"
390 IF PEEK(53279)=7 THEN 390
400 IF PEEK(53279)=5 THEN N=N+1:IF N=3
 THEN N=1
410 IF PEEK(53279)<>6 THEN 360
420 FOR I=0 TO 16:POKE PL0+108+I,PEEK(
PMBASE+I)
430 IF N=2 THEN POKE PL2+108+I.PEEK(PM
BASE+I)
440 POKE PL1+108+I,PEEK(PMBASE+I+192)
450 IF N=2 THEN POKE PL3+108+I,PEEK(PM
BASE+I+192)
460 NEXT I
470 POKE 53248,64:POKE 53249,64
480 IF N=2 THEN POKE 53250,74:POKE 532
51,74
490 POKE 704,116:POKE 705,60
500 POKE 706,116:POKE 707,14
510 POKE HP0,64:POKE HP1,64:IF N=2 THE
N POKE HP2,74:POKE HP3,74
520 POKE VP0,108:POKE VP1,108:IF N=2 T
HEN POKE VP2,108:POKE VP3,108
530 POKE 53768,1:LEVEL=1:FINISH=4:T1=0
:LAP1=1:LAP2=1:T2=0:TIME=0
540 GOSUB 1570:GOSUB 1670:? CHR$(125):
GOSUB 1420:POKE 53278,0
550 POKE SPEED1,10:POKE SPEED2.10
560 A=USR(30000)
570 LTIME1=0:LTIME2=0
580 POKE 18,0:POKE 19,0:POKE 20,0
590 REM MAIN LOOP
600 GOSUB 700
610 IF PEEK(VP0)<115 AND PEEK(VP0)>100
 AND PEEK(HP0)<94 THEN GOSUB 950
620 IF PEEK(VP2)<115 AND PEEK(VP2)>100
 AND PEEK(HP2)<94 THEN GOSUB 1040
630 IF PEEK(53279)=3 THEN A=USR(29000)
:GOTO 310
640 SOUND 2,0,0,0:POKE 53768,1
650 POKE 657,32:POKE 656,0:? "     "
660 POKE 657,32:POKE 656,0:? TIME
670 TIME=INT(65536*PEEK(18)+256*PEEK(1
9)+PEEK(20))/50
680 POKE 77,0:GOTO 600
690 REM COLLISION
700 C0=PEEK(COLL0):C1=PEEK(COLL1):DIR=
DIRECTION1:VP=VP0:CAR=1
710 HP=HP0
720 GOSUB 790
730 C0=PEEK(COLL2):C1=PEEK(COLL3):DIR=
DIRECTION2:VP=VP2:CAR=2
740 HP=HP2:GOSUB 790
750 C0=PEEK(PCOLL0):C1=PEEK(PCOLL1):DI
R=DIRECTION1:VP=VP0:CAR=1:HP=HP0
760 GOSUB 790
770 C0=PEEK(PCOLL2):C1=PEEK(PCOLL3):DI
R=DIRECTION2:VP=VP2:CAR=2:HP=HP2
780 GOSUB 790:RETURN
790 IF C0=0 AND C1=0 THEN RETURN
800 IF PEEK(DIR)<12 THEN D=PEEK(DIR)+1
2:GOTO 820
810 IF PEEK(DIR)>11 THEN D=PEEK(DIR)-1
2
820 IF D<0 THEN D=21
830 IF D>21 THEN D=0
840 POKE DIR,D
850 IF D=0 THEN POKE VP,PEEK(VP)-6
860 IF D=12 THEN POKE VP,PEEK(VP)+6
870 IF D=18 THEN POKE HP,PEEK(HP)-6
880 IF D=6 THEN POKE HP,PEEK(HP)+6
890 IF D=21 THEN POKE VP,PEEK(VP)-6:PO
KE HP,PEEK(HP)-6
900 IF D=9 THEN POKE VP,PEEK(VP)+6:POK
E HP,PEEK(HP)+6
910 IF D=3 THEN POKE VP,PEEK(VP)-6:POK
E HP,PEEK(HP)+6
920 IF D=15 THEN POKE VP,PEEK(VP)+6:PO
```



```
KE HP,PEEK(HP)-6
930 GOSUB 1110:RETURN
940 REM LAP COUNT CAR 1
950 IF PEEK(SPEED1)=10 THEN RETURN
960 D=PEEK(DIRECTION1):IF D=15 OR D=12
 OR D=9 THEN RETURN
970 T=TIME-LTIME1:IF T<6 THEN RETURN
980 LTIME1=TIME:T1=T
990 AV1=TIME/LAP1:LAP1=LAP1+1:AV1$(1,1
0)=STR$(AV1)
1000 ? CHR$(125):GOSUB 1420
1010 IF LAP1=FINISH+1 THEN GOSUB 1950:
POP :GOTO 310
1020 RETURN
1030 REM LAP COUNT CAR 2
1040 IF PEEK(SPEED2)=10 THEN RETURN
1050 D=PEEK(DIRECTION2):IF D=15 OR D=1
2 OR D=9 THEN RETURN
1060 T=TIME-LTIME2:IF T<6 THEN RETURN
1070 LTIME2=TIME:T2=T
1080 AV2=TIME/LAP2:LAP2=LAP2+1:AV2$(1.
10)=STR$(AV2)
1090 ? CHR$(125):GOSUB 1420:IF LAP2=FI
NISH+1 THEN GOSUB 2010:POP :GOTO 310
1100 RETURN
1110 SOUND 2,128,8.14
1120 REM CHANGE POSITION OF CARS AFTER
 COLLISION
1130 IF PEEK(HP)<70 THEN POKE (HP),PEE
K(HP)+2
1140 IF PEEK(VP)>98 THEN POKE (VP),PEE
K(VP)-2
1150 IF PEEK(HP)>192 THEN POKE (HP),PE
EK(HP)-2
1160 IF PEEK(VP)<50 THEN POKE (VP),PEE
K(VP)+2
1170 IF CAR=1 THEN A=USR(ADR(CL1$)):IF
 PEEK(SPEED1)<8 THEN POKE SPEED1,PEEK(
SPEED1)+2
1180 IF CAR=2 THEN A=USR(ADR(CL2$)):IF
 PEEK(SPEED2)<8 THEN POKE SPEED2,PEEK(
SPEED2)+2
1190 POKE 53278,0:RETURN
1200 REM DRAW TRACK
1210 POSITION 0,0:? #6;"QQQQSSMPHKKKss
SSSQQQ"
1220 POSITION 0,1:? #6;"QQQrrrrrhkkkrr
rrrQQQ"
1230 POSITION 0,2:? #6;"QQZ
   XQQ"
1240 POSITION 0,3:? #6;"QZ
    XQ"
1250 POSITION 0,4:? #6;"Q
    Q"
1260 POSITION 0,5:? #6;"Q
    Q"
1270 POSITION 0,6:? #6;"Q
    Q"
1280 POSITION 0,7:? #6;"Q
    Q"
1290 POSITION 0,8:? #6;"Q    JSSSSSSSS
V    Q"
1300 POSITION 0,9:? #6;"Q    SSSSSSSSS
S    Q"
1310 POSITION 0,10:? #6;"Q    SSSSSSSS
SS    Q"
1320 POSITION 0,11:? #6;"Q    SSSSSSSS
SS    Q"
1330 POSITION 0,12:? #6;"Q    XSSSSSSS
SZ    Q"
1340 POSITION 0,13:? #6;"Q
    Q"
1350 POSITION 0,14:? #6;"Q
    Q"
1360 POSITION 0,15:? #6;"Q
    Q"
1370 POSITION 0,16:? #6;"QV
    JQ"
1380 POSITION 0,17:? #6;"QQV
   JQQ"
1390 POSITION 0,18:? #6;"QQQrrHKKKrrrr
rrrrQQQ"
1400 POSITION 0,19:? #6;"PPPPPhkkkSSSS
SSSSQQQ"
1410 RETURN
1420 POKE 656,0:POKE 657,0:? "CAR 1 LA
P";LAP1
1430 POKE 656,0:POKE 657,12:? "L.LAP";
T1
1440 POKE 656,0:POKE 657,23:? "AV";
1450 IF AV1<10 THEN ? AV1$(1,3)
1460 IF AV1>9 AND AV1<100 THEN ? AV1$(
1,4)
1470 IF AV1>99 THEN ? AV1$(1.5)
1480 POKE 656,1:POKE 657.0:? "CAR 2 LA
P";LAP2
1490 POKE 657,32:POKE 656,0:? TIME
1500 POKE 656,1:POKE 657,12:? "L.LAP";
T2
1510 POKE 656,1:POKE 657,23:? "AV";
1520 IF AV2<10 THEN ? AV2$(1,3)
1530 IF AV2>9 AND AV1<100 THEN ? AV2$(
1,4)
1540 IF AV2>99 THEN ? AV2$(1,5)
```

```
1550 RETURN
1560 REM CHANGE OPTIONS
1570 ? CHR$(125);"SELECT - NO OF LAPS ";FINISH
1580 ? "OPTION - CHANGE LEVEL ";LEVEL
1590 ? "START - START RACE"
1600 IF PEEK(53279)=7 THEN 1600
1610 IF PEEK(53279)=5 THEN FINISH=FINISH+2
1620 IF FINISH=26 THEN FINISH=4
1630 IF PEEK(53279)=3 THEN LEVEL=LEVEL+1:IF LEVEL=6 THEN LEVEL=1
1640 IF PEEK(53279)=6 THEN RETURN
1650 GOTO 1570
1660 REM LEVELS
1670 GOSUB 1210
1680 IF LEVEL=5 THEN GOSUB 1840:RETURN

1690 IF LEVEL=1 THEN RETURN
1700 IF LEVEL>1 THEN GOSUB 1750
1710 IF LEVEL>2 THEN GOSUB 1780
1720 IF LEVEL>3 THEN GOSUB 1800
1730 RETURN
1740 REM LEVEL2
1750 POSITION 3,5:? #6;"r":POSITION 3,15:? #6;"r"
1760 POSITION 16,5:? #6;"r":POSITION 16,15:? #6;"r"
1770 RETURN
1780 POSITION 10,3:? #6;"r":POSITION 10,15:? #6;"r"
1790 RETURN
1800 POSITION 3,6:? #6;"r":POSITION 3,16:? #6;"r"
1810 POSITION 16,6:? #6;"r":POSITION 16,16:? #6;"r"
1820 POSITION 10,4:? #6;"r":POSITION 10,16:? #6;"r"
1830 RETURN
1840 POSITION 3,4:? #6;"r":POSITION 5,6:? #6;"r"
1850 POSITION 3,14:? #6;"r":POSITION 5,16:? #6;"r"
1860 POSITION 7,3:? #6;"r":POSITION 9,5:? #6;"r"
1870 POSITION 7,13:? #6;"r":POSITION 9,15:? #6;"r"
1880 POSITION 11,7:? #6;"r":POSITION 13,5:? #6;"r"
1890 POSITION 11,17:? #6;"r":POSITION 13,15:? #6;"r"
1900 POSITION 15,3:? #6;"r":POSITION 15,7:? #6;"r"
1910 POSITION 15,13:? #6;"r":POSITION 15,17:? #6;"r"
1920 POSITION 17,10:? #6;"r":POSITION 15,13:? #6;"r"
1930 RETURN
1940 REM FINISH
1950 POKE 656,2:POKE 657,0
1960 ? "CAR 1 HAS WON-PRESS OPTION TO RACE AGAIN";
1970 POKE SPEED1,10:A=USR(29000):LAP1=LAP1-1:GOSUB 1420
1980 GOSUB 2080
1990 IF PEEK(53279)<>3 THEN 1990
2000 RETURN
2010 POKE 656,2:POKE 657,0
2020 ? "CAR 2 HAS WON-PRESS OPTION TO RACE AGAIN";
2030 POKE SPEED2,10:A=USR(29000):LAP2=LAP2-1:GOSUB 1420
2040 GOSUB 2080
2050 IF PEEK(53279)<>3 THEN 2050
2060 RETURN
2070 REM WINNER FANFARE
2080 FOR I=0 TO 128 STEP 2
2090 FOR P=160 TO 32 STEP -I:SOUND 0,P,14,10
2100 NEXT P:NEXT I:SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND 2,0,0,0:SOUND 3,0,0,0
2110 RETURN
2120 DATA 104,32,53,117,96,169,6,160,63,162,117,76,92,228,96,234,169,0,141,2
2130 DATA 210,141,3,210,141,0,210,141,1,210,32,87,117,32,233,118,76,95,228,173
2140 DATA 175,6,201,10,208,8,173,132,2,201,0,240,1,96,238,163,119,173,163,119
2150 DATA 205,175,6,240,1,96,169,0,141,163,119,32,156,118,24,173,174,6,109,168
2160 DATA 6,168,190,241,119,32,231,117,238,168,6,173,168,6,201,3,208,5,169,0
2170 DATA 141,168,6,173,174,6,141,230,118,169,120,133,204,169,2,133,205,238,9,120
2180 DATA 173,9,120,201,4,208,14,169,0,141,9,120,32,17,118,173,230,118,141,174
2190 DATA 6,173,169,6,141,232,118,173,164,6,141,231,118,173,4,208,201,0,208,10
2200 DATA 173,12,208,201,0,208,3,32,77,118,173,232,118,141,169,6,173,231,118,141
2210 DATA 164,6,96,169,0,141,173,6,172,169,6,189,0,144,153,0,148,189,192,144
2220 DATA 153,0,149,238,173,6,200,232,173,173,6,201,16,208,232,173,164,6,141,0
2230 DATA 208,141,1,208,96,24,162,0,161,204,201,15,240,50,201,7,208,21,238,238
2240 DATA 118,238,230,118,238,230,118,173,230,118,201,24,208,5,169,0,141,230,118,201
2250 DATA 11,208,21,206,230,118,206,230,118,206,230,118,173,230,118,201,253,208,5,169
2260 DATA 21,141,230,118,96,173,230,118,201,0,208,4,206,232,118,96,201,3,208,7
2270 DATA 206,232,118,238,231,118,96,201,6,208,4,238,231,118,96,201,9,208,7,238
2280 DATA 231,118,238,232,118,96,201,12,208,4,238,232,118,96,201,15,208,7,206,231
2290 DATA 118,238,232,118,96,201,18,208,4,206,231,118,96,201,21,208,6,206,231,118
2300 DATA 206,232,118,96,238,165,119,173,165,119,201,2,240,1,96,169,0,141,165,119
2310 DATA 173,132,2,201,1,240,15,206,175,6,173,175,6,201,0,208,5,169,1,141
2320 DATA 175,6,173,120,2,201,13,208,3,238,175,6,173,175,6,201,41,208,5,169
2330 DATA 40,141,175,6,173,175,6,105,32,141,0,210,169,170,141,1,210,96,0,0
2340 DATA 0,173,178,6,201,10,208,8,173,133,2,201,0,240,1,96,238,164,119,173
2350 DATA 164,119,205,178,6,240,1,96,169,0,141,164,119,32,166,119,24,173,177,6
2360 DATA 109,176,6,168,190,241,119,32,121,119,238,176,6,173,176,6,201,3,208,5
2370 DATA 169,0,141,176,6,173,177,6,141,230,118,169,121,133,204,169,2,133,205,238
2380 DATA 10,120,173,10,120,201,4,208,14,169,0,141,10,120,32,17,118,173,230,118
2390 DATA 141,177,6,173,171,6,141,232,118,173,166,6,141,231,118,173,6,208,201,0
2400 DATA 208,10,173,14,208,201,0,208,3,32,77,118,173,232,118,141,171,6,173,231
2410 DATA 118,141,166,6,96,169,0,141,173,6,172,171,6,189,0,144,153,0,150,189
2420 DATA 192,144,153,0,151,238,173,6,200,232,173,173,6,201,16,208,232,173,166,6
2430 DATA 141,2,208,141,3,208,96,0,0,0,238,240,119,173,240,119,201,2,240,1
2440 DATA 96,169,0,141,240,119,173,133,2,201,1,240,15,206,178,6,173,178,6,201
2450 DATA 0,208,5,169,1,141,178,6,173,121,2,201,13,208,3,238,178,6,173,178
2460 DATA 6,201,41,208,5,169,40,141,178,6,173,178,6,105,32,141,2,210,169,170
2470 DATA 141,3,210,96,0,0,16,32,48,64,80,96,112,128,144,160,176,32,16,0
2480 DATA 80,64,48,128,112,96,176,160,144
2490 DATA 0,40,198,238,198,68,0,0,198,198,238,68,0,0,0,0
2500 DATA 0,40,68,238,198,198,0,0,68,198,238,198,0,0,0,0
2510 DATA 0,40,198,238,198,198,0,0,198,198,238,198,0,0,0,0
2520 DATA 0,8,8,28,88,65,194,129,67,3,24,24,24,0,0,0
2530 DATA 0,0,24,28,24,193,194,129,67,2,26,24,16,16,0,0
2540 DATA 0,0,24,28,24,193,194,129,67,2,26,24,16,16,0,0
2550 DATA 0,0,0,36,108,68,2,0,0,0,2,68,108,36,0,0
2560 DATA 0,0,0,72,108,68,2,0,0,0,2,68,108,72,0,0
2570 DATA 0,0,0,108,108,68,2,0,0,0,2,68,108,108,0,0
2580 DATA 0,0,16,16,26,10,3,192,194,192,24,24,24,0,0,0
2590 DATA 0,0,0,24,24,11,3,193,194,64,88,24,8,8,0,0
2600 DATA 0,0,0,24,24,11,3,193,194,64,88,24,8,8,0,0
2610 DATA 0,16,56,16,0,186,56,56,56,0,16,186,56,0,0,0
2620 DATA 0,16,186,16,0,56,56,56,186,0,16,56,56,0,0,0
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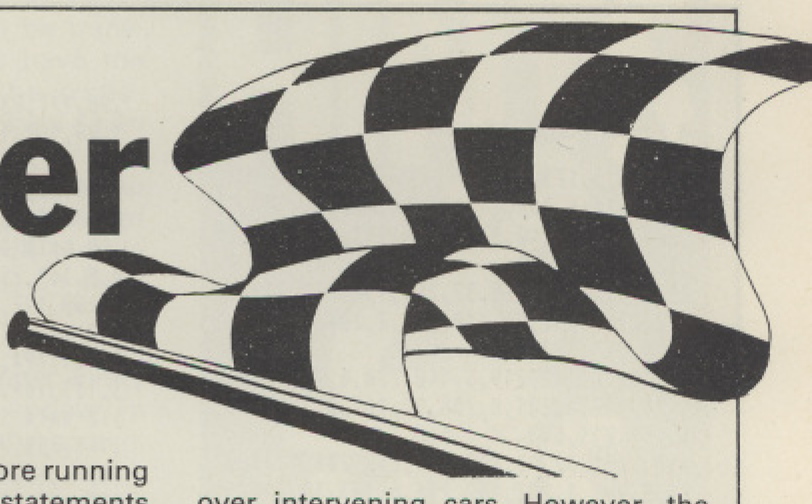
```
2630 DATA 0,16,56,16,0,56,56,56,56,0,16,56,56,0,0,0
2640 DATA 0,0,16,0,6,150,57,60,156,232,98,32,0,16,0,0
2650 DATA 0,8,0,0,70,22,57,60,156,233,96,32,8,0,0,0
2660 DATA 0,0,0,8,6,22,57,60,156,232,96,32,0,0,0,0
2670 DATA 0,0,0,72,0,48,180,182,182,182,180,48,0,72,0,0
2680 DATA 0,0,0,36,0,48,180,182,182,182,180,48,0,36,0,0
2690 DATA 0,0,0,0,0,48,180,182,182,182,180,48,0,0,0,0
2700 DATA 0,0,0,8,32,97,220,60,57,22,68,0,0,8,0,0
2710 DATA 0,0,16,0,34,96,220,60,57,150,4,0,16,0,0,0
2720 DATA 0,0,16,0,34,96,220,60,57,150,4,0,16,0,0,0
2730 DATA 104,169,0,162,0,157,0,148,157,0,149,232,208,247,96,104,169,0,162,0
2740 DATA 157,0,150,157,0,151,232,208,247,96
2750 REM DLI ROUTINE
2760 RESTORE 2790:FOR I=0 TO 27:READ A:POKE 1536+I,A:NEXT I
2770 DL=PEEK(560)+256*PEEK(561):POKE 512,0:POKE 513,6:POKE DL+24,134
2780 POKE 54286,192:RETURN
2790 DATA 72,138,72,169,0,141,10,212,141,24,208,141,26,208,169,12,141,23,208,169
2800 DATA 224,141,9,212,104,170,104,64
2810 REM LOAD CHARACTER SET
2820 DIM ML$(40)
2830 CHBASE=256*136
2840 RESTORE 2870:FOR L=1 TO 36:READ A
2850 ML$(L,L)=CHR$(A):NEXT L
2860 A=USR(ADR(ML$),136):POKE 756,136
2870 DATA 104,104,104,133,204,169,224,133,206,162,0,160,0,177,205,145,203,200,208,249
2880 DATA 164,204,200,132,204,164,206,200,132,206,232,224,5,208,232,96
2890 FOR I=0 TO 7:READ D
2900 POKE CHBASE+(56*8)+I,D:NEXT I
2910 DATA 247,45,27,15,7,3,1,1
2920 FOR I=0 TO 7:READ D
2930 POKE CHBASE+(42*8)+I,D:NEXT I
2940 DATA 1,1,3,7,15,27,45,247
2950 FOR I=0 TO 7:READ D
2960 POKE CHBASE+(51*8)+I,D:NEXT I
2970 DATA 44,118,221,119,190,107,94,52
2980 FOR I=0 TO 7:READ D
2990 POKE CHBASE+(38*8)+I,D:NEXT I
3000 DATA 0,0,85,170,85,0,0,0
3010 FOR I=0 TO 7:READ D
3020 POKE CHBASE+(44*8)+I,D:NEXT I
3030 DATA 255,245,63,27,15,197,103,165
3040 FOR I=0 TO 7:READ D
3050 POKE CHBASE+(45*8)+I,D:NEXT I
3060 DATA 231,103,160,224,112,223,119,253
3070 FOR I=0 TO 7:READ D
3080 POKE CHBASE+(49*8)+I,D:NEXT I
3090 DATA 239,189,247,94,187,238,181,255
3100 FOR I=0 TO 7:READ D
3110 POKE CHBASE+(58*8)+I,D:NEXT I
3120 DATA 239,180,216,240,224,192,128,128
3130 FOR I=0 TO 7:READ D
3140 POKE CHBASE+(54*8)+I,D:NEXT I
3150 DATA 128,128,192,224,240,216,180,239
3160 FOR I=0 TO 7:READ D
3170 POKE CHBASE+(40*8)+I,D:NEXT I
3180 DATA 0,127,127,127,127,127,127,127
3190 FOR I=0 TO 7:READ D
3200 POKE CHBASE+(43*8)+I,D:NEXT I
3210 DATA 0.255,255,255,255,255,255,255
3220 FOR I=0 TO 7:READ D
3230 POKE CHBASE+(50*8)+I,D:NEXT I
3240 DATA 126,66,126,66,126,66.126.66
3250 FOR I=0 TO 7:READ D
3260 POKE CHBASE+I,D:NEXT I
3270 DATA 0,0,0,0,0,0,0,0
3280 FOR I=0 TO 7:READ D
3290 POKE CHBASE+(48*8)+I,D:NEXT I
3300 DATA 237,255,0,0,0,255,119,221
3310 RETURN
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	CP1 (Y)	570	957 (6)	1130	RKC (P)
20	CP2 (3)	580	ST8 (P)	1140	SL7 (N)
30	CP3 (X)	590	DYW (R)	1150	R9L (A)
40	7LC (S)	600	POP (E)	1160	RN5 (G)
50	8US (J)	610	5JO (L)	1170	501 (8)
60	4VC (P)	620	5NT (Q)	1180	5AU (2)
70	Y7E (7)	630	M41 (T)	1190	8CM (Y)
80	2R4 (O)	640	MPQ (K)	1200	D6N (R)
90	6D4 (L)	650	XXM (9)	1210	CFP (K)
100	9TR (W)	660	SM7 (2)	1220	HQR (E)
110	AN8 (O)	670	73E (P)	1230	TA7 (S)
120	S1J (C)	680	9G2 (J)	1240	JA8 (8)
130	O6S (D)	690	DYX (V)	1250	6M9 (W)
140	8NQ (9)	700	Y2J (Q)	1260	6PA (9)
150	4TW (G)	710	KDC (T)	1270	6RC (X)
160	9AW (Q)	720	PJQ (F)	1280	6TD (C)
170	MPF (K)	730	YGJ (V)	1290	WU2 (3)
180	7EH (S)	740	75C (R)	1300	WMO (Q)
190	2H1 (W)	750	9T7 (N)	1310	12D (C)
200	22K (Y)	760	Q1Q (3)	1320	18D (Q)
210	5GK (1)	770	APW (H)	1330	1GF (M)
220	7C1 (N)	780	AYE (K)	1340	CUE (Y)
230	NL4 (2)	790	NN4 (1)	1350	D1E (Q)
240	A4X (W)	800	WY6 (E)	1360	D7E (Y)
250	ESS (5)	810	C25 (O)	1370	J3E (6)
260	T4R (Q)	820	5AO (6)	1380	NHE (A)
270	XD1 (S)	830	6VF (C)	1390	2UD (5)
280	NXN (A)	840	WQ6 (3)	1400	MYU (C)
290	P3N (S)	850	3JM (D)	1410	VVK (D)
300	CWY (L)	860	7RK (M)	1420	EMJ (L)
310	8MQ (R)	870	8E2 (E)	1430	3XK (3)
320	L3T (W)	880	4FK (1)	1440	XNT (A)
330	Y7Q (6)	890	FLT (4)	1450	QYY (P)
340	GE1 (H)	900	DFL (U)	1460	EDR (W)
350	7NJ (Y)	910	CTN (7)	1470	RDQ (S)
360	QUQ (Y)	920	ELU (5)	1480	F35 (H)
370	OOD (4)	930	AQT (Q)	1490	YJ9 (6)
380	3C1 (8)	940	DD1 (L)	1500	3VR (M)
390	LD7 (D)	950	6E4 (S)	1510	XLX (R)
400	MG5 (7)	960	6XS (T)	1520	ROO (6)
410	QCN (J)	970	KT9 (Y)	1530	EER (D)
420	T63 (V)	980	8QH (5)	1540	RDR (C)
430	QAX (F)	990	1WX (O)	1550	W8K (E)
440	DUA (E)	1000	PVE (L)	1560	DXN (8)
450	RCS (X)	1010	17R (9)	1570	T1H (C)
460	P74 (T)	1020	VFK (D)	1580	MVR (Y)
470	QH7 (8)	1030	D4N (A)	1590	WXM (N)
480	H85 (9)	1040	EFN (T)	1600	SD5 (P)
490	QRN (A)	1050	UWX (P)	1610	JR6 (L)
500	PHR (G)	1060	EMO (H)	1620	YN2 (6)
510	UY4 (U)	1070	EHO (U)	1630	Y8K (5)
520	396 (6)	1080	3S7 (7)	1640	YJC (O)
530	W9P (9)	1090	CKO (1)	1650	Q5D (C)
540	NPC (Y)	1100	VFK (4)	1660	E2N (G)
550	121 (V)	1110	609 (7)	1670	TG8 (W)
560	QXC (8)	1120	D6N (1)	1680	HSK (U)

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1690	10X (V)	2250	5AY (K)	2810	EOP (N)
1700	WND (4)	2260	S8T (O)	2820	WY2 (F)
1710	WR8 (R)	2270	QPJ (E)	2830	93M (A)
1720	WRV (H)	2280	PTL (F)	2840	DSQ (F)
1730	WDK (P)	2290	PYK (U)	2850	Q3T (J)
1740	E2N (K)	2300	RNX (K)	2860	66S (5)
1750	RYK (N)	2310	JYG (V)	2870	YPD (W)
1760	K6U (1)	2320	QQ7 (6)	2880	9TU (U)
1770	WMK (6)	2330	JTE (X)	2890	FOE (D)
1780	K1Q (6)	2340	RFH (K)	2900	V65 (9)
1790	WRK (2)	2350	PJM (J)	2910	GTY (S)
1800	RSN (6)	2360	TC6 (7)	2920	EPE (D)
1810	K8U (M)	2370	STQ (R)	2930	V65 (9)
1820	K1Q (L)	2380	R1N (H)	2940	G4T (T)
1830	WHK (K)	2390	QNN (9)	2950	EVE (F)
1840	POT (2)	2400	QJV (C)	2960	VE5 (A)
1850	67N (F)	2410	QDW (X)	2970	WSL (6)
1860	P75 (5)	2420	RN1 (X)	2980	F2E (J)
1870	694 (S)	2430	K5X (W)	2990	VP5 (P)
1880	6S3 (W)	2440	PXU (3)	3000	E1K (P)
1890	92N (W)	2450	KQ8 (J)	3010	DHF (6)
1900	5WN (C)	2460	Q53 (6)	3020	U26 (6)
1910	8L1 (D)	2470	EC1 (C)	3030	TVV (D)
1920	875 (F)	2480	VAP (E)	3040	DPF (W)
1930	WMK (G)	2490	M4Y (G)	3050	U96 (V)
1940	EAN (D)	2500	KJ9 (J)	3060	SHU (Q)
1950	H7K (J)	2510	UU3 (A)	3070	DVF (6)
1960	3VX (6)	2520	M7E (3)	3080	UL6 (5)
1970	Y97 (1)	2530	NDR (4)	3090	V2C (G)
1980	TYO (Y)	2540	NFR (2)	3100	DKF (Y)
1990	UPM (N)	2550	76H (V)	3110	UA6 (X)
2000	VAL (L)	2560	6TM (4)	3120	SNV (E)
2010	FUL (8)	2570	HLL (4)	3130	DRF (W)
2020	2JG (9)	2580	LVV (H)	3140	UD6 (V)
2030	X1T (Y)	2590	JOK (G)	3150	SX7 (W)
2040	SL1 (5)	2600	HKK (L)	3160	DXF (D)
2050	T8E (3)	2610	L99 (W)	3170	UD6 (E)
2060	VPL (4)	2620	LAK (Q)	3180	V4C (3)
2070	DDP (O)	2630	H21 (J)	3190	E4F (J)
2080	HOL (2)	2640	KJD (R)	3200	U56 (H)
2090	AWE (O)	2650	H94 (8)	3210	VPF (W)
2100	95C (S)	2660	DV3 (F)	3220	DTF (D)
2110	VHL (Y)	2670	PHN (J)	3230	UA6 (E)
2120	RWK (G)	2680	PTJ (8)	3240	UQN (6)
2130	QVP (C)	2690	J4E (3)	3250	EOF (P)
2140	P9L (2)	2700	5PF (U)	3260	JVU (Q)
2150	Q9L (Y)	2710	GXH (O)	3270	1TH (V)
2160	T49 (O)	2720	HOH (U)	3280	E6F (G)
2170	QRA (Q)	2730	PO8 (L)	3290	UV6 (E)
2180	R66 (Q)	2740	62C (4)	3300	R47 (T)
2190	R8M (Q)	2750	E4P (3)	3310	VRM (V)
2200	S27 (X)	2760	NYO (T)		
2210	RW7 (F)	2770	YCX (W)		
2220	RXW (4)	2780	K8X (4)		
2230	Q29 (8)	2790	TH6 (F)		
2240	1DF (5)	2800	U66 (M)		

Maniac Mover



After Car Crazy, here's another bout of motoring madness from STEPHEN BROUMLEY

IT'S a hard life being an ambulance driver, especially when you have to drive down the new eight-lane motorways dodging the speeding maniacs who inhabit every stretch.

To make things even worse, you have just realised that it's today you must undertake your APT examination – Ambulance Proficiency Test. If you fail it means certain doom, and an awful existence without a job.

But don't worry, all you have to do is drive your new hi-tech, turbo-charged ambulance down the motorway for as long as the examiner wants you to – or until you crash. Simple isn't it?

Don't forget to use Get it Right! to check the program after you have typed it in. Save a copy before running it, as an error in the Data statements will crash the computer.

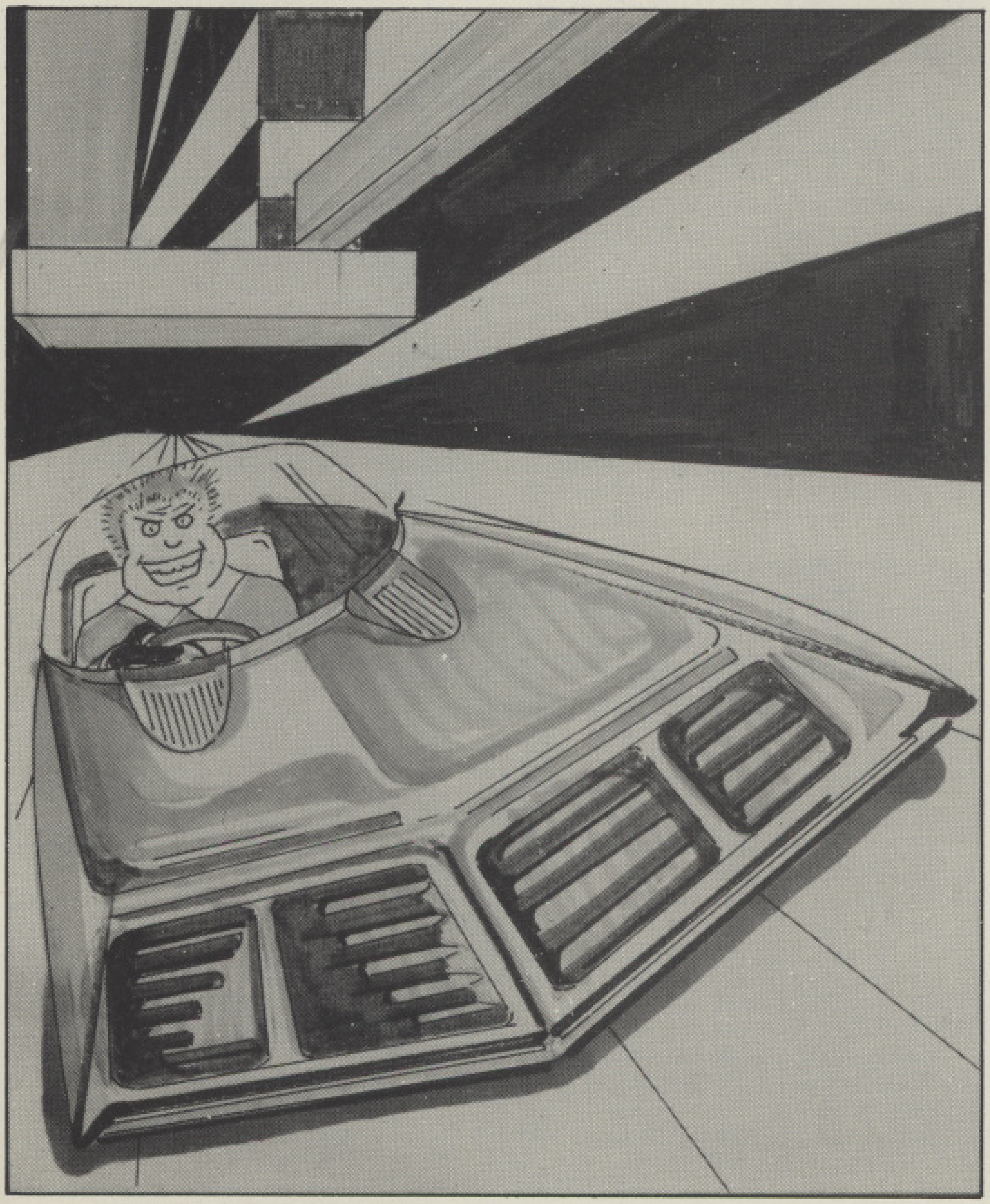
When you're happy all is correct, plug a joystick into port one and run the program. When it has finished initialising, the eight lanes of motorway are drawn and you are prompted to press fire to start.

Pulling the joystick left and right will decelerate and accelerate your car respectively, while up and down move your car in the chosen direction.

Being an up-to-date vehicle, your ambulance possesses a turbo charger unit which you can use to get out of trouble quickly. Simply press your fire button to enable the turbo and jump over intervening cars. However, the turbo drive only lasts for a few seconds.

After this you must wait while it recharges before you can use it again. If your car is any other colour than white you are either using the turbo or it's recharging.

You have three lives and gain an extra one every 10,000 points. When this occurs you will hear five beeps. So, have fun and watch out for those motorway maniacs.



```
10 REM *************************
20 REM *   'MANIAC MOVER!'     *
30 REM *    BY S.BROUMLEY      *
40 REM *    (c)ATARI USER      *
50 REM *************************
60 GRAPHICS 0:POKE 752,1:SETCOLOR 2,0,
0:? "PLEASE WAIT INITIALISING...."
70 CK=0:FOR P=32768 TO 34591:READ D:PO
KE P,D:CK=CK+D:NEXT P
80 IF CK=226412 THEN SOUND 0,0,0,0:GRA
PHICS 0:POKE 755,0:A=USR(32768)
90 ? "ERROR-CHECK DATA!":END
100 DATA 104,169,0,141,214,6,141,218,2
,32,134,130,32,7,133,173,48,2,133,203,
173,49,2,133
110 DATA 204,169,240,160,2,145,203,169
,130,160,7,145,203,200,200,200,192,28,
208,247,169,130,145,203
120 DATA 169,162,141,0,2,169,133,141,1
,2,169,192,141,14,212,173,11,212,201,1
20,208,249,169,0
130 DATA 141,203,6,141,208,6,169,5,141
,199,6,169,50,141,198,6,76,139,132,32,
150,133,169,255
140 DATA 141,12,208,169,12,141,199,2,1
69,123,133,204,169,0,133,203,170,168,1
45,203,200,208,251,230
150 DATA 204,232,224,5,208,243,32,176,
131,160,32,169,255,153,0,123,152,24,10
5,24,168,192,224,208
160 DATA 242,169,255,160,223,153,0,123
,169,120,141,220,6,169,100,141,219,6,1
69,0,141,212,6,141
170 DATA 215,6,141,213,6,32,134,130,16
9,120,141,7,212,169,3,141,29,208,169,6
2,141,47,2,169
180 DATA 17,141,111,2,169,0,141,30,208
,141,208,6,96,32,91,128,141,30,208,32,
48,133,169,0
190 DATA 133,77,173,196,6,24,109,215,6
,141,196,6,144,3,238,197,6,173,197,6,2
01,22,208,3
200 DATA 32,108,132,173,252,2,201,255,
240,20,169,255,141,252,2,32,150,133,17
3,252,2,201,255,240
210 DATA 249,169,255,141,252,2,32,143,
133,173,201,6,208,8,169,14,141,194,2,1
```

Turn to Page 44 ▶

Game

◄ *From Page 43*

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41,195,2,173,200
220 DATA 6,208,14,173,14,208,24,109,15,208,201,0,240,3,76,194,131,32,227,129,32,168,130,32
230 DATA 203,130,32,254,130,174,219,6,172,220,6,32,92,130,142,2,208,138,24,105,8,141,3,208
240 DATA 142,219,6,140,220,6,238,212,6,173,212,6,201,8,208,92,169,0,141,212,6,174,215,6
250 DATA 32,92,130,224,255,208,1,232,224,8,208,1,202,142,215,6,173,10,210,41,7,170,254,232
260 DATA 6,173,199,2,24,105,16,141,199,2,173,3,135,73,4,141,3,135,173,202,6,208,8,169
270 DATA 160,141,5,210,24,144,29,169,40,141,4,210,172,202,6,185,60,134,208,8,169,175,141,5
280 DATA 210,24,144,5,169,160,141,5,210,206,202,6,172,220,6,162,0,189,250,134,153,0,126,189
290 DATA 13,135,153,0,127,200,232,224,19,208,238,173,216,6,24,237,215,6,141,216,6,32,23,133
300 DATA 76,208,128,238,213,6,173,213,6,201,8,208,2,169,0,141,213,6,168,185,240,6,141,221
310 DATA 6,160,0,162,220,236,221,6,208,1,200,232,208,247,192,0,240,81,172,213,6,173,10,210
320 DATA 41,7,24,121,240,6,153,240,6,172,213,6,173,10,210,41,240,9,12,153,248,6,173,10
330 DATA 210,24,45,214,6,24,105,1,153,232,6,185,227,133,170,24,105,15,141,221,6,173,10,210
340 DATA 24,41,7,168,185,235,133,168,185,70,134,157,0,124,185,85,134,157,0,125,200,232,236,221
350 DATA 6,208,237,96,173,120,2,24,106,176,6,192,34,240,2,136,136,24,106,176,6,192,204,240
360 DATA 2,200,200,24,106,176,5,224,49,240,1,202,24,106,176,5,224,191,240,1,232,96,172,214
370 DATA 6,185,243,133,24,105,2,168,162,0,157,223,6,24,105,4,157,224,6,152,232,232,224,8
380 DATA 208,240,169,0,141,231,6,96,160,0,152,170,185,240,6,141,221,6,24,121,232,6,24,237
390 DATA 215,6,153,240,6,205,221,6,208,3,222,240,6,200,192,8,208,224,96,172,215,6,185,34
400 DATA 134,141,210,6,169,200,141,1,210,173,209,6,205,210,6,208,4,141,0,210,96,173,210,6
410 DATA 24,237,209,6,144,6,238,209,6,24,144,3,206,209,6,173,209,6,141,0,210,96,238,208
420 DATA 6,173,208,6,201,4,240,1,96,169,0,141,208,6,174,215,6,232,138,42,170,160,13,32
430 DATA 129,131,202,208,248,169,8,133,205,162,0,164,205,177,88,24,233,15,133,203,165,205,24,105
440 DATA 25,168,177,88,24,233,15,133,204,165,203,197,204,208,3,76,77,131,165,204,24,229,203,176
450 DATA 3,76,85,131,96,230,205,165,205,201,14,208,206,169,0,133,203,165,203,24,105,8,168,177
460 DATA 88,133,204,165,203,24,105,33,168,165,204,145,88,170,165,203,24,105,31,168,138,153,253,133
470 DATA 230,203,165,203,201,6,208,217,96,177,88,24,105,1,145,88,201,26,240,1,96,169,16,145
480 DATA 88,136,192,9,240,3,76,129,131,160,21,177,88,201,25,240,5,24,105,1,145,88,169,9
490 DATA 141,202,6,160,9,76,129,131,160,0,169,255,153,232,6,169,218,153,240,6,200,192,8,208
500 DATA 241,96,32,150,133,162,0,169,52,141,194,2,141,195,2,32,143,133,32,143,133,169,62,141
510 DATA 194,2,141,195,2,32,143,133,32,143,133,232,224,15,208,223,173,219,6,74,74,10,10,170
520 DATA 24,105,8,168,169,14,141,221,6,169,0,141,208,6,142,2,208,140,3,208,32,143,133,169
530 DATA 0,141,0,210,169,50,141,2,210,169,255,141,4,210,173,221,6,141,1,210,141,3,210,141
540 DATA 5,210,238,208,6,173,208,6,201,4,208,18,173,221,6,201,0,240,11,169,0,141,208,6
550 DATA 206,221,6,206,221,6,224,0,240,4,202,202,202,202,192,0,240,4,200,200,200,200,224,0
560 DATA 208,172,192,0,208,168,140,201,6,160,21,177,88,170,202,138,145,88,201,16,208,3,76,139
570 DATA 132,76,205,128,169,0,133,19,238,214,6,173,214,6,201,10,208,2,169,0,141,214,6,32
580 DATA 134,130,169,0,141,196,6,141,197,6,96,32,150,133,32,91,128,166,89,232,134,204,165,88
590 DATA 24,105,155,133,203,144,2,230,204,160,0,140,215,6,185,42,134,145,203,200,192,18,208,246
600 DATA 169,0,141,215,6,169,7,141,214,6,169,15,141,197,2,32,176,131,32,23,133,206,216,6
610 DATA 32,227,129,32,168,130,32,143,133,173,132,2,208,236,160,0,152,145,203,200,192,18,208,249
620 DATA 169,0,141,214,6,141,215,6,141,213,6,141,196,6,141,197,6,141,200,6,32,134,130,32
630 DATA 7,133,169,255,141,252,2,169,40,141,201,6,76,205,128,162,0,160,2,189,253,133,145,88
640 DATA 200,232,224,37,208,245,96,173,216,6,141,4,208,24,105,64,141,5,208,24,105,64,141,6
650 DATA 208,24,105,64,141,7,208,96,173,200,6,208,33,173,201,6,240,12,169,138,141,194,2,141
660 DATA 195,2,206,201,6,96,173,132,2,240,1,96,169,100,141,200,6,169,255,141,201,6,169,175
670 DATA 141,3,210,173,198,6,141,2,210,24,109,199,6,141,198,6,170,173,199,6,224,30,208,2
680 DATA 73,254,224,80,208,2,73,254,141,199,6,24,105,80,141,194,2,141,195,2,206,200,6,208
690 DATA 5,169,160,141,3,210,96,165,20,197,20,240,252,96,169,0,168,153,0,210,200,192,9,208
700 DATA 248,96,72,152,72,138,72,141,10,212,172,203,6,174,203,6,185,223,6,141,24,208,141,26
710 DATA 208,185,248,6,141,18,208,141,19,208,185,240,6,141,0,208,24,105,8,141,1,208,238,203
720 DATA 6,173,203,6,201,9,208,2,169,0,141,203,6,104,170,104,168,104,64,36,60,84,108,132
730 DATA 156,180,204,0,30,60,90,120,150,30,120,0,16,48,112,176,32,144,64,208,96,51,35,47
740 DATA 50,37,26,16,16,16,16,16,16,0,0,0,45,37,46,26,19,0,0,0,40,41,51,35
750 DATA 47,50,37,26,16,16,16,16,16,16,250,190,165,145,120,90,60,40,48,50,37,51,51,82
760 DATA 38,41,50,37,82,52,47,82,48,44,33,57,1,0,1,0,1,0,1,0,1,0,127,176
770 DATA 152,143,207,175,143,143,143,175,207,143,152,176,127,204,254,158,143,165,149,135,135,135,149,165
780 DATA 143,158,254,156,127,176,152,143,207,175,143,143,143,175,207,143,152,176,127,254,110,201,143,175
790 DATA 175,143,143,143,143,143,143,201,110,254,21,85,255,216,183,175,237,170,237,175,183,216,255,85
800 DATA 21,64,80,248,216,104,184,131,255,131,184,104,216,248,80,64,0,0,0,3,4,45,251,251
810 DATA 251,45,4,3,0,0,0,64,32,176,80,84,156,207,207,207,156,84,80,176,32,64,255,224
820 DATA 176,249,255,239,239,239,239,239,239,249,240,160,255,254,127,217,157,25,159,31,31,159,31,25
830 DATA 157,217,127,254,127,241,249,239,231,231,231,231,231,231,231,239,249,241,127,252,30,63,237,201
840 DATA 207,239,207,239,207,201,237,63,30,252,0,0,127,255,224,177,159,155,155,145,155,155,159,177
850 DATA 224,255,127,0,0,0,0,252,254,222,143,165,149,135,135,135,149,165,143,222,254,252,0,0
```

Get it right!

10 CP1 (Y)	180 61Q (U)	350 E8E (U)	520 6E6 (E)	690 HJF (Q)
20 CP2 (3)	190 8NS (U)	360 DGO (Q)	530 45K (2)	700 GNU (X)
30 CP3 (X)	200 JK7 (4)	370 6Y3 (H)	540 929 (U)	710 G6C (D)
40 CP4 (4)	210 HLY (9)	380 7R4 (F)	550 DL7 (E)	720 844 (C)
50 CP5 (Y)	220 FOR (H)	390 8VF (4)	560 LXO (F)	730 5PE (L)
60 4EE (3)	230 EH4 (T)	400 7UV (6)	570 731 (H)	740 M2J (S)
70 GTC (H)	240 64P (N)	410 8CK (V)	580 L2E (H)	750 677 (C)
80 1E7 (F)	250 E7N (M)	420 7DO (6)	590 LJQ (G)	760 FCW (1)
90 T8K (G)	260 6S5 (3)	430 LPU (W)	600 75W (E)	770 29G (7)
100 4UU (W)	270 F4Q (Q)	440 N73 (P)	610 J5C (A)	780 1SC (Q)
110 VTQ (G)	280 FKL (L)	450 M2K (R)	620 79U (R)	790 1QJ (F)
120 LJV (C)	290 H6Y (S)	460 TRY (2)	630 L5L (N)	800 36S (7)
130 MYD (3)	300 5KD (H)	470 JXK (5)	640 FJ1 (2)	810 4NC (M)
140 TLT (L)	310 F2S (P)	480 7Y1 (C)	650 GHF (T)	820 034 (O)
150 LQ8 (Y)	320 6UT (N)	490 J4P (X)	660 HFH (5)	830 1U1 (D)
160 N47 (K)	330 E8F (C)	500 GSV (4)	670 68T (V)	840 UJF (X)
170 F86 (K)	340 MJN (M)	510 FN3 (6)	680 9DN (4)	850 KYO (4)

Your HINTS & TIPS

Conan the Barbarian

OUR superb map this month shows the intricate levels to this wonderful graphical adventure from Datasoft. The game features excellent graphics and sound effects. But above all it has that all important factor needed to make a game – tremendous playability.

Because a map isn't of much use on its own we are also offering some help on how to kill Volta and his evil minions.

● **Level One:** Very simple to complete this one. Just kill the hawk creature that attacks you and make your way to the top.

● **Level Two:** A bit of pixel-perfect leaping is needed on this level. Jump from the castle battlement to the tree, then to the ground. Collect the key from the niche in the wall and jump over the river.

Climb up the ladder, go through the door, on to the next ladder and go down the next ladder to the branch marked A. Stand with your back to the tree, take one step and jump to the other tree.

Any slight mistake and you will end up in the stake pit. When you have passed this, go through the locked door and into the cave.

● **Level Three:** Go down the ladder and, avoiding the scorpions, use the transporters to get to the jewel. Take care, for the scorpions can be transported as well. When you have the jewel go back through the transporters – avoiding the scorpions again – and place it in the holder.

A large bubble will appear. Jump into it and when it is near the top of the cave jump out. You will tumble down the hole and end up on level four.

● **Level Four:** Here's your chance to collect more swords and gems. Every now and then they will appear in random positions around the screen. Take the gems – one at a time – to the gem holders. When you have done this twice you are allowed to take the key.

If you wait around and collect another gem it will save you a bit of time on the next level. Collect as many swords as you can – you'll need them.

● **Level Five:** The six gems at the bottom of the screen will change into dragons when they disappear. If you stand in front of the first transporter door you can shoot the dragons just as they enter the second one.

Once you have killed them all, place the gem in the holder. This turns off the electricity so you can get the key.

● **Level Six:** On this level the sphere in the middle of the screen produces little charges of static which can kill you. If you stand at the edge of the platform marked X they won't touch you.

When the eyeball comes along shoot it and the ladder at the end of the platform grows. Keep shooting the eye until the ladder touches the lower platform. Climb up it and shoot the chandelier. It will fall on the sphere and destroy all the static, turn off the electricity and allow you to go to the next level.

● **Level Seven:** Climb down the ladder and stand with your back to the wall at position Y. Volta will send a lightning bolt after you. When it reaches the top of the ladder, throw a sword and it will hit the bolt on its way back, turning it into a jewel. You must then place it into the holder – which is easier said than done.

The bouncy thing at Z gets you back to position Y. When you have collected three jewels your avian ally will pick up Volta and drop him in the volcano. It will then return for you and drop you at the exit. – **Bryan Stevens, Andover, Hants.**

WE welcome letters from readers giving their help with games on the Atari that they would like to pass on to other readers. The address to write to is:

Hints and Tips
Atari User
Europa House
Adlington Park
Adlington
Macclesfield SK10 4NP



ATARI USER Classifieds

Has upgrading your computer given you hardware you no longer need? Or have changing interests left you with unwanted software? Then THIS is the place to advertise your surplus items. *Atari User* readers are always on the lookout for a bargain and this is the first place they look!

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SOFTWARE Solutions

Your programming problems solved by ANDRÉ WILLEY

Let's start off this month with a couple of questions from Carlos Jorge Sousa, who unfortunately didn't provide his address.

I've been told that my 130XE hasn't got a voice synthesiser, but now I'm not so sure. My doubt occurred while playing the budget game ET Phone Home, and after I had collected all the pieces of the phone I heard him say "ET Phone Home" twice, and the game would proceed. Is there really a voice synthesiser incorporated in my Atari machine, and if so could you please tell me how I use it?

Secondly, is it possible to create more than two colours on a Graphics 8 screen by using machine code? I ask because I saw a photo in a recent issue of Atari User of the title screen to Gauntlet, and there appear to be about 16 colours on it.

I thought the only mode which allows 16 colours was Graphics 9, but I'm sure that the Gauntlet screen can't be using it because the picture seems too highly detailed.

Modes 7 and 15 – which give more detail – can only display four colours. Could you explain how these screens are created?

The simple answer to the first part of your letter is that your information is quite correct. The Atari 8 bit micros don't have a built in speech synthesiser.

There was a period when Atari developed several new machines which contained extra chips to perform various tasks.

The 1200XL, which was never released in the UK, did have a speech synthesiser built into it. But the 130XE doesn't have one. However, it does contain a very powrful music and sound chip called POKEY, and this can be used to great effect in producing voice-like sounds.

What happens is the voice – or any other sound required – is first played into a microphone attached to the Atari's joystick port. Then some machine code software scans the incoming signal and records it as a series of digital numbers representing tiny snapshots of the sound wave – in much the same way as a compact disc is created.

The quality of the final recording depends on the number of samples you make – the greater the number, the closer to the original sound you get. A compact disc, for example, makes tens of thousands of samples every second and can thus reproduce the original sound very accurately.

The Atari can't work quite that fast, and even if it could you would use up the whole of your memory to store a single second of recorded sound.

So a compromise must be reached and a sample rate of perhaps a couple of thousand per second will have been used. Once a sound has been digitised in this way it can be replayed by the POKEY chip which uses the sampled data to create a digital version of the sound.

Obviously this requires some very complicated software, but you can buy an interface and the necessary programs from 2 Bit Systems. It's called Replay, and you can use it to record, playback and even adjust real sounds inside your Atari.

Now on to the second part of your letter and multi-coloured graphic displays. This one is a little trickier as the programmers of the game have cheated and used some machine code trickery to get more colours from a Graphics 15 screen than you can normally obtain.

The first thing they did was to use a character screen, like Graphics 12 but without the blue text window at the bottom, and convert the picture into little blocks the size of a single character – a total of 40 blocks by 24 for this type of screen.

Each block was then converted into colour character information and stored just like an ordinary character set would be. When displayed side by side, they make up the picture once more – rather like putting a jigsaw puzzle back together.

This method has the advantage of allowing four main colours plus the background one as opposed to the usual three plus background given by Graphics 15. They then use another machine code routine to create the amazing scrolling colours effect which you will no doubt have seen used in other games.

So the answer to your question is really that you CAN'T get that many colours on a normal graphics screen – but it's amazing what a bit of hi-tech cheating can do.

String array problems

Finally this month, a problem from **Mr. K. Richards** of Lower Sydenham in London:

I am in the process of writing a program which requires many names to be entered into memory. I am using a FOR...NEXT loop to enter

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them in conjunction with this subroutine:

```
10000 OPEN #2,4,0,"K:": FO
R ML=1 TO 15
10010 POKE 702,64: GET #2,
MM: IF MM=155 THEN POP: GO
TO 10040
10020 IF (MM<65 OR MM>122)
 AND MM<>32 AND MM<>126 AN
D MM<>46 OR (MM>90AND MM<9
7) THEN 10010
10025 IF ML>15 THEN 10010
10030 PRINTCHR$(MM);:M$(M
L,ML)=CHR$(MM): NEXT ML
10040 CLOSE #2: RETURN
```

The problem arises when I try to print them out again. Whenever I try to do this, either in order or as they were entered, I can only get the last name I entered. Your assistance would be much appreciated. ❜

Your problem is quite a common one, and stems from the fact that Atari Basic does not support arrays of strings in the same way as it does for numbers.

You have got most of the code correct for making your own pseudo

SOFTWARE Solutions

array, but you are storing each name in the same 15 locations within a long string, and so each entry overwrites the previous one. What you must do is move further up into the string for each new entry.

I assume you are calling the subroutine with something along the lines of:

```
10 FOR NAME=0 TO 100
20 GOSUB 10000
30 NEXT NAME
```

which gives each entry a unique number between 0 and 100. This number should be used to tell your routine how far into the string it must go before storing the entered text. The first name will be stored in elements 1 to 15, the next in 16 to 30, the next in 31 to 45 and so on.

You will note that each start position is in fact one greater than fifteen times the element number – thus element zero starts at position 1, element one starts at position 16 – (15*1)+1 – with element two starting at 31 – (15*2)+1 – and so forth.

Since ML varies from 1 to 15, you should change line 10030 to the following:

```
10030 PRINT CHR$(MM);: POS
=NAME*15: M$(POS+ML,POS+ML
)=CHR$(MM): NEXT ML
```

This will now place each entry into the correct point in the long string and you can print them out again by altering the relevant routine in the same way. Simple really – well, almost!

● *That's it for another month. As always, we are interested to hear from our readers – old and new – who are experiencing problems with their Atari.*

If you need help write in to:
Software Solutions
Atari User
Europa House
Adlington Park
Adlington
Macclesfield SK10 4NP.

FIRST GET YOUR GAME...

I WOULD like to make a complaint about your magazine. Why is it that you are never up to date with your software reviews?

In the June 1988 issue you only reviewed three games when there were at least 10 new ones were available?

You could have reviewed Indoor Sports (Databyte), Spy vs Spy III (Databyte), Speed Run (Red Rat), Space Wars (Red Rat), Jackal (Konami), Scorpion (Tynesoft), Rampage (Activision), Freeway (Activision) and Cybernoid (Hewson). Why not review more games for the readers and stop being lazy? – **Allan Porter, Spalding, Lincolnshire.**

● Well Allan, let's take a close look at the games you mentioned. The two Databyte games are available in the USA but aren't over here yet.

Speed Run hasn't been completed by Red Rat and it'll be a few months before it arrives on the scene. The Hewson game that you mentioned is for the ST only and won't be coming out for 8 bit Atari micros. Rampage has been written for the 8 bit Atari micros but at the moment Activision can't make its mind up about releasing it on the UK market. Freeway isn't actually a game. It's a programming structure designed for the ST and Amstrad CPC computers.

Konami hasn't made its mind up about bringing Jackal out yet.

Now we move on to the interesting game you mentioned – Scorpion. Tynesoft shelved the idea of bringing this game out over a year ago and never publically said it was going to appear.

David Croft, head of software development at Tynesoft, is very curious how you got to hear about it. As are we at *Atari User*.

In the May 1988 issue of *Atari User* we took a look at Space Wars from Red Rat – why don't you try taking a peek at page 28?

ON THE CREST OF A WAVE

I WAS delighted to find the Biorhythms program in the May 1988 issue of Atari User, as I have been looking for such a routine for some time.

After having to type it in twice, due to my clumsiness, I got it working. It was at this point I decided I would like some printouts of my biorhythm cycles. As I own a 1020 printer/plotter I had to write the routine myself.

So, for other owners of a 1020 here are the modifications you need to make to the original program that will allow you to produce your own Biorhythm dumps. – **Stephen Shephard, Choppington, Northumberland.**

```
1001 ? CHR$(125):? "DO YOU
WANT A PRINTOUT (Y/N)";:INP
UT IN$
1002 IF IN$="N" THEN POKE 2
04,0
1003 IF IN$="Y" THEN POKE 2
04,1:OPEN #3,8,0,"P4:"
1004 IF IN$<>"Y" AND IN$<>"
N" THEN 1001
1141 IF PEEK(204) THEN ? 33
;CHR$(27);CHR$(7);"C0*A":?
#3;"      "M$(M2*10-9,M2*10
);YR
1171 IF PEEK(204) THEN ?#;C
HR$(27);CHR$(7);"*S1*C1*P P
HYSICAL ":? #3;"C2*PEMOTION
AL ":? #3;"C3*PMENTAL"
1181 IF PEEK(204) THEN ? #3
;"S0*A":? 33;CHR$827);CHR$(
7);"I*C0*M0,0,D0,-126*X2,10
,31*M0,-62*D318,-62*M4,-30*
D8,-30"
1182 IF PEEK(204) THEN ? #3
;"M6,-28*D6,-32*M4,-94*D8,-
94"
1231 IF PEEK(204) THEN ?
#3;"M0,-150":CLOSE 33
1311 IF PEEK8204) THEN ? 33
;"C";C;"*M4,";-2*(-SIN(PC*P
D)*30+31)
1331 IF PEEK(204) THEN ?
#3;"D";2*X;",";-2:Y
```

Hero has a flaw

I WAS very pleased with myself at having cracked the computer room in Universal Hero. But when I used the disc and plug the computer displayed "Now logging in". I thought wow, great I've done it. Then underneath it said "Error 1439 No disc present" and my plug disappeared.

I was really upset as I was enjoying the game until that point. Please tell me what to do because I am utterly stuck. – **Kara Ball, Keynsham, Bristol.**

● Sorry to disappoint you Kara but this particular game has a bug and you can't finish it. We've had rather a lot of complaints about it.

Friendly Geordies

I RECENTLY bought Winter Olympiad '88 from Tynesoft Software. Unfortunately, I had some loading problems with it. As I was going to the Atari User Show at the Alexandra Palace I decided to take it with me and see what they would do about it.

With no questions asked they happily replaced it and I returned home very content. However, I had problems loading this copy as well. So I phoned them on the Monday and by Wednesday of the same week they had sent me a fresh working copy.

I would just like to say thank you to Tynesoft for their sterling work and tell other readers of their friendly and professional attitude. – **S. Jenkins, Ealing, London.**

A day well spent

I VISITED the Atari User show last April with some misgivings as to the best way to travel to the Alexandra Palace. But I needn't have worried. A train journey to London followed by a short walk to the underground got me half way.

Then came another short train journey and then, by the courtesy of the show organisers, a bus ride to the front door of the Alexandra Palace. It was a lovely day out and I completed it with some superb purchases.

Please pass on my thanks to all concerned. – **G. Harvey, Frant, Tunbridge Wells.**

● Thanks for the letter. We'll see you at the next *Atari User* show.

Missing line in the mine

AFTER recently typing in the excellent Mine Runner program from the May 1988 issue of Atari User I found a mistake in the listing. Line 1530 reads:

```
1530 REM CONTROL CHARACTER
ON LINE 2605 IS REVERSE/CON
TROL A
```

However, when you take a look at the listing there isn't a line 2605. Even though the program works perfectly I began to wonder if I was missing out on something.

So to give me peace of mind, was there anything missing from the published listing? – **Jonathon Marino, Liverpool.**

● Don't worry Jonathon, the

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listing that appeared is complete. When the programmer was developing the game he had an extra routine located at line 2605.

However, when he finished it he realised he didn't need it so he just removed it – leaving the REM statement the same.

Lost in the dungeon

AFTER reading the review of Alternate Reality: The Dungeon in Atari User *I decided to go out and buy it. Being new to this sort of adventure, I followed the main rules and attempted to make a map.*

In the March 1988 issue of Atari User *you printed various hints and tips which nudged me back on to the right tracks. Then in the April issue you spoke of some maps of the Dungeon you had received.*

And so to my plea: Can you please print the maps and help me complete this compelling adventure? – **Niell Becker, North Basingstoke, Hampshire.**

● Without promising too much, we'll get our mapping expert to take a look at the ones we received. If he can do anything with them we'll print sections of the rather large Dungeon to help you.

Double the praise

I HAVE just bought Double Pack 2 from Red Rat Software – reviewed in the April 1988 issue of Atari User.

I am amazed at the value for money it gives, and I think your review of it was a little too conservative.

Dreadnought is the best game I have for my Atari – even better than some Atari ST games I have seen.

I would like to thank Red Rat for supporting the 8 bit Atari micros with such quality software. – **Bryan Hurst, Bolton.**

● Everyone has different views towards games Bryan. You must remember that over the years our reviewers have seen an awful lot of games and programs. But as you say, this compilation pack does offer excellent value for money.

Kidding around

CONGRATULATIONS on an excellent magazine. I particularly like the software reviews section and the utility programs – please keep it up.

Now a question for you to answer for me: Are there any educational programs available for very young children? I would like to introduce my 18 month old son to the computer as soon as possible – he already likes the click caused by bashing my keyboard. – **Andy Walker, Ellesmere Port, South Wirral.**

● Obtaining educational games for a child so young is going to be a problem for you. Silica Shop does stock a few of Atari's old favourites but none of them are directed at the age group you are after.

However, some titles to look out for are:

- ☐ Juggles House
- ☐ Juggles Rainbow
- ☐ Mickey in the Great Outdoors
- ☐ My First Alphabet.

If all else fails..

CAN you please help me with a problem I am having with the Ten of the Best utilities disc I recently bought? When I load and run five of the programs I constantly get errors.

The programs are: DSKERROR.BAS, AUTODIR1.BAS, DSKRENUM.BAS, 80COLMAS.BAS and STRIPPER.BAS. Have I got a damaged disc or am I loading them wrongly? – **P. Turland, Moulton, Northants.**

● Your disc is working perfectly and you aren't loading them wrongly. Your problem is that you havn't read the instructions that come on the flip side of your master disc.

Take a look at this Help file and all will be revealed. Most of the programs on that particular disc create an AUTORUN.SYS file when they are run.

Sorry for any confusion, but the instructions do tell you so.

Roulette solution

£10 LETTER

HERE is my solution to your superb Programmer's Challenge about the roulette wheel. It follows all of the guidelines stipulated by Mike Cook in the March 1988 issue of Atari User. – **A.W. Golding, Barnet, Herts.**

● Mr. Golding wins the £10 prize for the best solution sent in. In a future issue of *Atari User* we'll be giving you another Programmers Challenge to solve.

```
10 ************************
20 *   Readers Solution   *
30 *   by A. W. Golding   *
40 *    (c)Atari User     *
50 ************************
100 DIM X$(4):REM X$=RESULT
OF GAME
110 DIM S$(37):REM S$=WIN O
R LOSE
120 FOR I=1 TO 38:? "*";:NE
XT I
130 ? "             ENTER 0 T
O EXIT"
140 ? :? "SIZE OF INITIAL F
UND FOR BETS ";
150 INPUT F:REM F=INITIAL F
UND
160 IF F=0 THEN ? "}":END
170 WF=F:REM WF=WORKING FUN
D
180 ? "ENTER SIZE OF YOUR 1
st BET    ";
190 INPUT B:REM B=SIZE OF 1
st BET
200 B=B/2
210 ? :? "No.       RESULT
  BET       FUND"
220 G=G+1:REM G=No. OF GAME
230 R=INT(RND(0)*37)+1
240 B=B*2
250 S$="LLWLWLWLWLWWLWLWLWL
LWLWLWLWLWWLWLWLWL"
260 IF S$(R,R)="W" THEN WF=
WF+B:X$="WIN":REM R IS A WI
NNING No.
270 IF S4(R,R)="L" THEN WF=
WF-B:X$="LOSE":REM R IS A L
OSING No.
280 ? :? R,:? X$,:? B,:? WF
290 REM ******************
300 REM IF WF IS NOT LARGE
310 REM ENOUGH TO DOUBLE
320 REM THE LAST BET THEN
330 REM YOU CANNOT CONTINUE
340 REM PLAYING.
350 REM ******************
360 IF WF<B*2 THEN ? :? "IN
 ";G;" GAMES YOU HAVE LOST"
;F-WF;" POUNDS":? "AND CANN
OT DOUBLE YOUR LAST BET":?
:RUN
370 IF X$="LOSE" THEN 220:R
EM LOOPS BACK FOR NEXT GAME
380 ? :? "IN ";G;" GAMES YO
U HAVE WON ";WF-F;" POUNDS"
:? :GOTO 180
```

WIN A TENNER!

EACH month we will award £10 prizes for the most interesting letters sent to us.

So now there's more reason than ever to contribute to our lively mailbag pages.

Get your pens out, start writing and you could be one of the winners. The address:

Mailbag Editor
Atari User
Europa House
Adlington Park
Adlington
Macclesfield SK10 4NP

Two discs crammed with the most popular programs from your favourite magazine!

These two exciting compilations bring together some of the very best listings from the pages of *Atari User*.

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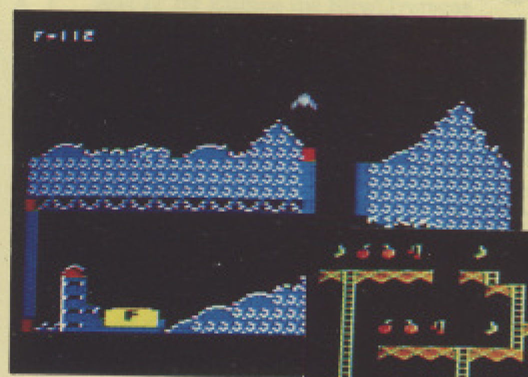
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Ten of the Best Games

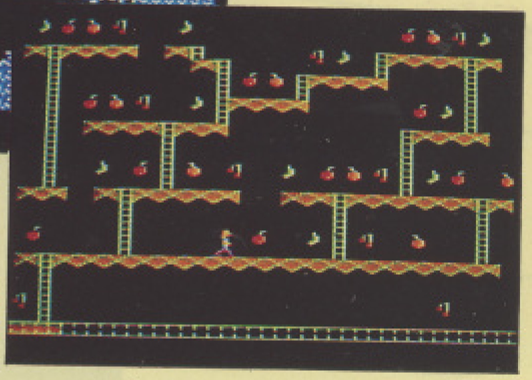
Chopper Rescue – Take command of a helicopter to rescue lost soldiers
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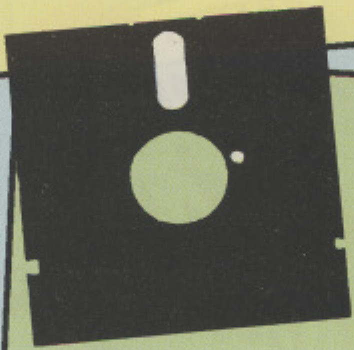
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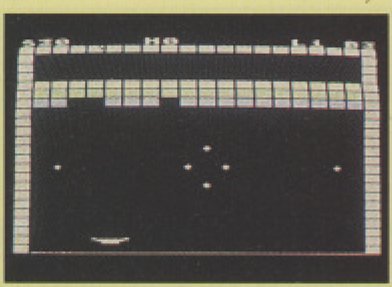


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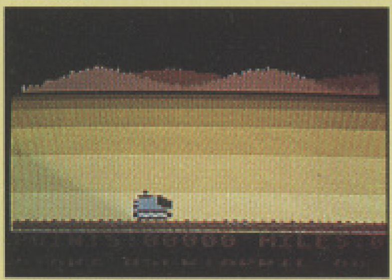
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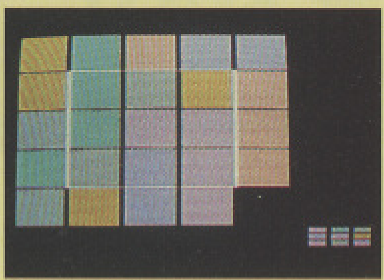
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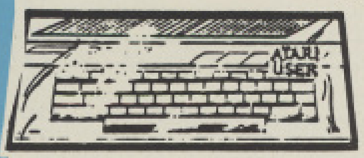
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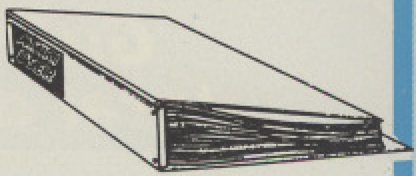
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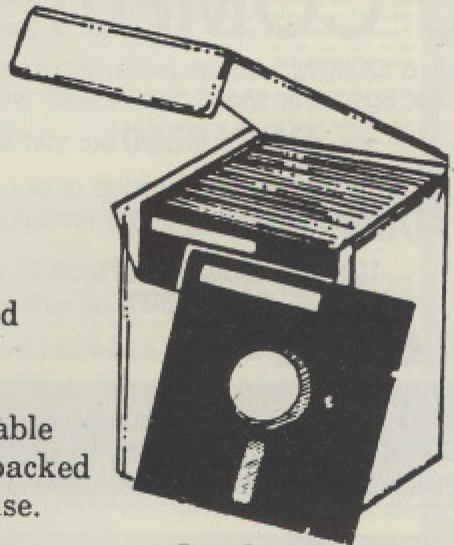
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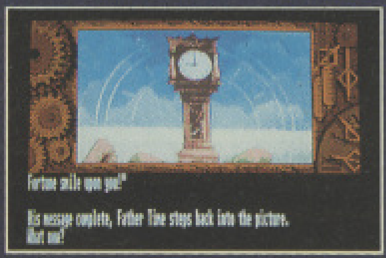
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